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ORIGINAL ARTICLES.

THE SPECIFIC CAUSE OF YELLOW FEVER. A REPLY TO DR. G. SANARELLI.

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WERE it not for the fact that the general practitioner of medicine in this country takes such a lively interest in all that pertains to the causation of yellow fever, and might construe our silence as an admission that we had followed faulty methods in our work, we would not at this time reply to the paper of G. Sanarelli, entitled "Some Observations and Controversial Remarks on the Specific Cause of Yellow Fever," which appeared in the MEDICAL NEWS under date of August 12, 1899. To those who are acquainted with the methods followed in the laboratories of the Army Medical Museum, we believe that we could well afford to leave this matter until such time as our completed observations might be given publication.

We pass by, therefore, as unworthy of comment, Sanarelli's insinuation that we could lend ourselves to the support of any personal controversy between himself and Surgeon-General Sternberg; and further, his advice that we should have "looked up for a moment some good treatise on bacteriology before attempting to launch such a paradox" as that bacillus icteroides should be considered to be a variety of the hog-cholera bacillus.

That our paper should partake somewhat of a controversial character, we very much regret, since we would have much preferred to publish our observations in full, so that our fellow-workers might be placed in possession of the complete details of our experimental work and thus be in a position to judge whether our methods had been good or faulty. But for the reason given at the commencement of this paper and because of the remarkable tone of Sanarelli's article, we must take up what we consider to be a somewhat unpleasant task.

Because we have recorded focal necroses in the liver of guinea-pigs and rabbits inoculated with bacillus icteroides (we might have mentioned necroses in the liver of dogs, which Sanarelli has quite overlooked); and since, in Sanarelli's opinion, we have failed to reproduce that degree of "acute steatosis" which he and others have recorded, we are designated as "victims to some deplorable neglect of technical precautions in the laboratory," and the conclusion is drawn "that a gross and deplorable error was made in their laboratory and that somehow the cultures of the two micro-organisms being experimented with got mixed for want of sufficient attention."

We are willing to admit that such a condition of affairs, as is implied in the latter part of this quotation, is possible in any laboratory; but in this connection we cannot refrain from paying our admiration to Sanarelli's mental acumen in arriving at this conclusion, since he must have realized that, if we had *not* "mixed the two micro-organisms," his claim for the discovery of the specific cause of yellow fever can no longer be sustained.

And here let us avow that we hailed with delight Sanarelli's announcement of the discovery of his bacillus icteroides as the specific agent of yellow fever and earnestly hoped that his work would be confirmed by other observers. When later directed by Surgeon-General Sternberg to carefully compare bacillus *x* with bacillus icteroides and report to him the results of our investigations we were only influenced by the desire to ascertain whether these were distinct bacilli, and if so, to see whether we could confirm Sanarelli's observations in the several animals. That we could be influenced in the slightest degree by Dr. Sternberg in arriving at our conclusions is a grave aspersion upon our reputation as scientific workers.

If it can be proved that we have "mixed" our cultures and hence arrived at incorrect conclusions, we will hasten to admit our mistake. Let us see whether we have been careless in our technical precautions, and hence have, by mistake, inoculated our animals with the bacillus of hog-cholera when we had intended to use bacillus icteroides.

In the first place, before proceeding to consider Sanarelli's criticisms of our work, we desire to state that the culture of bacillus icteroides with which we have made the majority of our observations, was obtained by Dr. Sternberg from Pasteur's laboratory. We are informed by Dr. Sternberg that the package containing this culture was opened by Professor Roux in his (Sternberg's) presence and the culture

handed to the latter. It was delivered to one of us by Dr. Sternberg on the 24th day of September, 1897, and bore the label of the Laboratory of Hygiene, University of Montevideo. We may remark that this culture was not in the shape of the ordinary stroke culture, but contained a number of well isolated colonies, such as would be obtained by inoculating an agar slant with a small drop of the blood of an infected animal. Several of the colonies on this agar slant showed the peculiar appearance of growth which Sanarelli considers as characteristic of bacillus icteroides. It was from one of these so-called characteristic colonies that we made our first transfer. Subsequent transplantations have been made by us at intervals of about four weeks, and have always been labeled "Bacillus Icteroides, Original." We have thus transplanted this original culture on agar, without transmission through animals, for a period of nearly two years. Like our other stock cultures, it has been kept in agar tubes provided with rubber caps and always in a dark closet.

In the second place, at the time that we began our investigations (September, 1897), no culture of the hog-cholera bacillus was in our laboratory, nor did we procure a culture of this bacillus from the Bureau of Animal Industry until the following spring (May, 1898) about seven months after we had begun our work.

We may be excused for particularizing somewhat in this connection in order to set ourselves right before those who are interested in this subject.

Let us then state that the hog-cholera bacillus was one with which neither of us was acquainted, except as to some of its most prominent morphological and biological features, such as size, motility, growth in milk, and in the three sugars; but we had not witnessed its pathological effects in the smaller animals. We had more than once commented on the fact that its action on litmus milk, and in the three sugars was similar to that of bacillus icteroides; but as we were not prepared at that time to look upon bacillus choleræ suis as a secondary invader in human beings, we did not follow up the subject further.

During the month of February, 1898, we had ascertained that the blood-serum of a dog partially immunized against bacillus icteroides, although exercising decided agglutinative action upon the latter, was negative as regards the typhoid bacillus and bacillus coli communis, except in low dilutions. At this time our observations were almost completely interrupted by our duties with the class of the Army Medical School. We had scarcely resumed our work when we were honored with a visit from Dr. Theobald Smith, formerly of the Bureau of Animal Industry, and who did all of the bacteriological work recorded in the "Report on Hog Cholera; Its History, Nature, and Treatment," to whose instructive pages Dr. Sanarelli has so courteously invited our attention. We communicated to Dr. Smith the fact that bacillus *x* (Sternberg) when injected into the circulation of dogs would cause the same general symptoms, and the same extensive hemorrhagic lesions in the stomach and intestine as was produced by bacillus icteroides, and hence that these lesions were not confined to the action of the latter bacillus. Dr. Smith then remarked that in reading Sanarelli's various articles, *he was continually reminded of the hog-cholera bacillus.*

When further told by us that bacillus icteroides produced multiple necroses in the liver of guinea-pigs, he remarked that he was of the opinion *that bacillus icteroides would yet be placed in the hog-cholera group.* Fortified by this expression of opinion by one, than whom no one is more conversant with the hog-cholera bacillus or its pathological action, we for the first time proceeded to procure a culture of bacillus choleræ suis, and to test the action of our dog's serum, with the result already given in our preliminary note. As we had *already*, many times, obtained these focal necroses in guinea-pigs with bacillus icteroides, how could we have "mixed the two micro-organisms?" We could scarcely have mixed what we did not have in our possession. If, as Sanarelli has stated, these "focal necroses are entirely specific for hog-cholera," we had already proven by the production of these that bacillus icteroides was a variety of the hog-cholera bacillus. It is very important to note that cultures taken from these animals gave, in about thirty per cent., colonies similar in all respects to those described by Sanarelli as characteristic of bacillus icteroides.

Turning now to Sanarelli's criticisms of our work, these may be stated as follows:

First. The marked difference in growth on potato of his bacillus and bacillus choleræ suis.

Second. That the toxin of his bacillus resists a temperature of 100° C., while that of the hog-cholera bacillus undergoes modification as low as 60° C., and is entirely destroyed at 100° C. Sanarelli here quotes from Selander's observations.

Third. Dissimilarity of growth in gelatin plates of these two bacilli.

Fourth. That while the hog-cholera bacillus produces a large number of foci of coagulation necrosis (the organ is not stated), these do not occur in animals inoculated with bacillus icteroides.

Fifth. That we have failed to produce acute steatosis, or fatty degeneration of the liver in dogs injected with his bacillus.

As regards the difference in growth on potato

Sanarelli says, "it is sufficient to recall that the bacillus of Salmon forms on potato a luxurious brownish-colored culture somewhat like that of Mauve, while my bacillus icteroides develops on potato completely without color and is scarcely visible."

Salmon and Smith,[1] in their report, implied neglect of which on our part to even casually glance at, has occasioned Sanarelli so much apparent regret, state as follows: "growth on boiled potato when at 95° F., appears as a faint straw-colored deposit within twenty-four hours after inoculation. At 20° C. or 25° C., it appears one or two days later. It slowly spreads in all directions as a layer of perceptible thickness. The color changes to a dark brick-red, or *may remain whitish* (italics our own). In general the growth is darker the more rapidly the potato dries up."

Smith and Moore,[2] in describing the growth of several varieties of the hog-cholera bacillus, state "that there may be slight variations in the depth of color of the growth on potato due to variations in the potatoes used. Now and then potatoes are encountered on which no growth appears. The surface assumes a glistening appearance, but multiplication perceptible to the eye does not take place."

Welch,[3] describing the growth of the hog-cholera bacillus, says: "the growth on potato assumes generally a brownish or yellowish tint, *but it may be white* and *sometimes is indistinct* (italics our own), although microscopically the growth is abundant."

Our own observations show that the hog-cholera bacillus, when transplanted on potato grows, as a rule, as a moist straw-colored or brownish layer spreading over the greater part of the surface of the medium; but that exceptionally it presents a moist, almost colorless layer. Cover-slips from this moist, almost colorless layer show that a marked multiplication of the bacilli has taken place.

It will thus be seen that the growth of the hog-cholera bacillus on potato is variable, and that it does not always produce "a luxurious brownish colored growth," as claimed by Sanarelli.

Our experience with the growth of bacillus icteroides on potato is at variance with that given by Sanarelli. Both of us promptly transferred to various media the original bacillus icteroides turned over to us by Dr. Sternberg on September 24, 1897. As regards the growth on potato, we quote from our notes made on September 29th, 1897, as follows: Dr. Carroll, "a moist brownish growth." Dr. Reed, "grows less rapidly than bacillus *x*, giving a moist, thin, brownish layer, which spreads over the surface of the medium." These were duplicate observations made independently of each other.

Our subsequent observations have shown that bacillus icteroides on potato may grow as a colorless moist layer, or as a faint yellowish layer, or that it may show a decided brownish color.

A. Agramonte,[1] who spent some months in this laboratory comparing a bacillus which he had obtained from yellow-fever cadavers at Santiago, Cuba, during the summer of 1898, with bacillus icteroides, could find no difference between these. He says as regards the growth of this bacillus: "Potato cultures for twenty-four hours at 39° C. gave an abundant pale-cream, almost colorless growth; when compared side by side with others made of bacillus icteroides it was impossible to differentiate them. At the end of a week the cultures remained of the same color; while some of bacillus icteroides had taken on a *brownish* tinge (italics our own), others remained the same.

All of which goes to show that bacillus icteroides does not always grow on potato as a colorless, scarcely visible layer, as claimed by Sanarelli, and hence that he cannot safely base a differentiation on this account between his bacillus and bacillus choleræ suis. It would be well if Sanarelli would recall our experience with the typhoid bacillus. As with that bacillus, so with bacillus icteroides, it may or may not grow on potato as a colorless layer.

With reference to the claim of Sanarelli that the toxin of his bacillus will resist a temperature of 100° C., while that of the bacillus of hog-cholera undergoes modification as low as 60° C., and is entirely destroyed at 100° C., we have no observations of our own to record. We propose to show, however, that his statement concerning the supposed effect of certain temperatures on the toxin of the bacillus choleræ suis, which he quotes from Selander, is entitled to no credence whatever. Indeed, we consider Sanarelli's reference to the work of Selander and Metchnikoff[2] as particularly unfortunate, since subsequent observations have conclusively demonstrated that at that time, 1890–92, neither Selander nor Metchnikoff were working with the hog-cholera bacillus!

We almost feel like suggesting to our distinguished critic that he should follow the advice which he seems so willing to give to others, and spend a brief time in consulting the literature on this subject.

Referring to Selander's investigations, Welch and Clement[3] say: "We wish, however, in this connec-

[1] "Hog Cholera," Bureau of Animal Industry, Washington, 1889.
[2] "Infectious Swine Diseases," Washington, 1894.
[3] *Johns Hopkins Bulletin*, vol. i, No. 1, 1889.

[1] The bacillus icteroides (Sanarelli) and bacillus *x* (Sternberg), *Centralblatt für Bacteriologie*, etc., Band xxv, No. 18–19, 1899.
[2] *Annals de l'Institut Pasteur*, 1890–92.
[3] "Hog Cholera and Swine Plague," Proceedings First Veterinary Congress of America, Chicago, 1893.

tion, to express our conviction that the organism described by Selander in 1890, and probably also that by Metchnikoff later, as the hog-cholera (or swine-pest) bacillus, is not identical with the genuine hog-cholera bacillus as we know it in this country." After recording their inability to confirm the experiments of Selander in increasing the virulence of the supposed hog-cholera bacillus, they say: "Whatever this organism of Selander may have been, we feel convinced that it was not our hog-cholera bacillus, and we base this conclusion upon the results of his experiments in Pasteur's Institute, as published, and upon our experience with the cultures with which he kindly supplied us. . . . We believe Metchnikoff's hog-cholera microbe to be one of the hemorrhagic septicemia bacilli, possibly the swine-plague or schweine-seuche bacillus."

This opinion expressed by Welch and Clement was subsequently proven to be correct by Smith and Moore,[1] to whom Metchnikoff, having confirmed the observations of Selander in increasing the virulence of the supposed hog-cholera bacillus sent the blood of a guinea-pig inoculated with the bacteria in a sealed glass tube. These writers state that "cultivated on various substrata they presented all the characters of swine-plague bacteria as found in this country." Certainly we have not claimed any affinity between the swine-plague bacillus and bacillus icteroides.

Not only does Sanarelli, in quoting from the work of Selander concerning the effect of varying temperatures upon the toxin of Selander's bacillus, confound the bacillus of swine-plague with the bacillus of hog-cholera, but he also displays the most astonishing want of acquaintance with the biological characters of the last-named bacillus. He says: "We may recall, besides, that colonies of the two forms of bacilli (bacillus icteroides and bacillus choleræ suis) on gelatin plates are as readily differentiable, even at first sight, as it is possible for bacilli to be."

On the contrary, we wish to state that plated, side by side, in gelatin, we have been unable to detect any differences in the colonies of these two bacilli with the naked eye, and that it is only by means of the microscope that faint differences can, as a rule, be made out, such as a slightly increased radiation in the colonies of bacilli icteroides, as compared with those of bacillus choleræ suis. We are, therefore, constrained to the opinion that Dr. Sanarelli has never plated on gelatin the genuine hog-cholera bacillus, such as we know it in this country.

Referring to the focal necroses found by ourselves in the liver of guinea-pigs and rabbits inoculated with bacillus icteroides, Sanarelli says: "I am very much surprised that Reed and Carroll should have found this lesion, and should have betrayed seemingly good faith in describing it so carefully, without realizing that the lesion is entirely specific to hog-cholera and limited to that affection, and is completely unknown in infections with bacillus icteroides."

We can pass by the discourteous part of the foregoing sentence; but we must confess that even had we not succeeded many times in producing these focal necroses in the liver of pigs and rabbits with bacillus icteroides, we were not prepared for the statement that this lesion was "entirely specific to hog-cholera and limited to that affection;" especially since Blachstein[1] had succeeded in producing this lesion in the liver of rabbits by the intravenous injection of bacillus coli communis and bacillus typhi abdominalis; and since, moreover, one of us (Reed[2]) working in Welch's laboratory, had caused the same lesion by injecting cultures of the typhoid bacillus into the mesenteric vein of rabbits.

Blachstein, speaking of the lesions due to bacillus coli communis, says: "The more striking and constant lesions, those most characteristic of the affection are in the bile and liver." Further he says: "only one or two such areas may be noticed, or they may occur in large numbers. . . . These areas occur both on the surface and in the depth of the liver. . . . On microscopical section these areas are found to be places where the liver cells have undergone necrosis." He adds: "These necrotic and inflammatory changes appear to be of essentially the same nature as have been observed after ligation of the common bile duct (Foá, Salvioli, Pick, and others), and occur in other infectious processes, such as after inoculation with typhoid bacilli, and with hog-cholera and schweine-pest bacilli."

Indeed, scattered areas of coagulation necrosis in the livers of these animals have been produced by other bacteria, and notably by such toxalbumens as abrin and ricin, in the hands of Flexner,[3] and we know, as stated by the latter, the close relationship existing between these bodies and certain bacterial toxins.

Again we ask, can Dr. Sanarelli be ignorant of the rich literature relating to the production of multiple focal necroses in the liver of guinea-pigs, rabbits, kittens, etc., by the bacillus diphtheriæ and its toxins? Indeed, in limiting focal necroses in the livers of guinea-pigs and rabbits to the agency of

[1] "Infectious Swine Diseases," Washington, 1894.

[1] "Intravenous Inoculation of Rabbits with the Bacillus Coli Communis and the Bacillus Typhi Abdominalis," *Johns Hopkins Bulletin*, vol. ii, No. 14, 1891.

[2] *Johns Hopkins Hospital Reports*, vol. v, 1895.

[3] "The Pathology of Tox-albumen Intoxication," *Johns Hopkins Hospital Reports*, vol. vi, 1897.

one particular bacterium, Sanarelli displays profound ignorance of the pathology of coagulation necrosis.

Turning to our statement that these lesions are caused by inoculation with bacillus icteroides, we invite attention to the fact that Agramonte,[1] to whom we communicated our observations, obtained the same necroses in pigs injected with a bacillus obtained from yellow-fever cadavers (33 per cent.) at Santiago, and which he identified as bacillus icteroides (Sanarelli). We note also that De Lacerda and Ramos[2] record the finding of "scattered yellow points" (*avec des points jaunes disséminès*) in the liver of one rabbit out of four inoculated with bacillus icteroides and which died on the second day. They say nothing about the microscopic examination of these scattered yellow points.

We have failed to find, as a rule, necroses in the livers of animals dying earlier than the fourth day, although we have generally found them between the fourth and ninth day after inoculation, especially prominent in the livers of guinea-pigs. Our earliest recorded observation was made on November 13, 1897, upon autopsying guinea-pig No. 456, dead on the fourth day after receiving 1 c.c. of a 20-hour bouillon-culture of bacillus icteroides. Concerning the liver, we note: "Organ pale; some recent adhesions, numerous small punctiform areas, yellowish white in color, to be seen under capsule."

With regard to the several observers cited by Sanarelli as in opposition to our findings, we have been unable to obtain the articles written by some of these and hence cannot state just what lesions they did find in the livers of the inoculated animals. Of those accessible to us, we find that Domennica della Rovera[3] states the following as the result of his infection of guinea-pigs with bacillus icteroides: "My experiments have demonstrated as a new finding in the liver, foci of small cells (focolai parvi cellulari) situated in the midst of the lobules; the protoplasm of the liver-cells appear very granular, the nuclei discolored and feebly stained, as well as the nuclei of the cells lining the biliary canals and capillaries." This description of Rovera agrees very well with what we have found microscopically, except that we also find larger foci, whose capillaries are crowded with polymorphonuclear leucocytes, and whose cells stain brightly with eosin, especially toward the more central parts of the area. Sometimes we find an entire lobule the seat of coagulation necrosis. This quotation further shows the accuracy with which Della Rovera has made his observations, and completely refutes the position taken by Sanarelli, *viz.:* that focal necroses are never found in the livers of animals inoculated with bacillus icteroides. Rovera[1] also says concerning lesions found in the livers of rabbits: "I also saw foci of small cells, situated within the lobules, such as I have already recorded for guinea-pigs."

In view of the foregoing observations comfirming our findings as regards the agency of bacillus icteroides in producing focal necroses in the liver of of guinea-pigs and rabbits, we are constained to say that Dr. Sanarelli in emphasizing the specific character of these necroses for the hog-cholera bacillus, again shows a surprisingly limited knowledge of the work which has been recorded in this line. We are quite willing to admit, however, that these necroses are probably more abundantly produced by the hog-cholera bacillus and its varieties, such as bacillus icteroides, than by other bacteria.

This brings us to Sanarelli's fifth criticism of our results, *viz.:* that we "did not succeed in reproducing the acute steatosis, fatty degeneration of the liver in dogs that was always so prominent a feature in my own observations as well as those of Foá" and several other investigators whose names we here omit.

We have endeavored to extract from the literature, as far as the Library of the Surgeon-General's Office would permit, the experiments made upon dogs by various observers, but have not been able to find definite data except as regards the experiments of Sanarelli,[2] De Lacerda and Ramos,[3] to which we add our own results.

We submit these in the following table:

It will be seen that there are eight (8) observations by Sanarelli; twelve (12) by De Lacerda and Ramos, and seven (7) by Reed and Carroll, making a total of twenty-seven (27). Of these, six (6) dogs recovered, leaving twenty-one (21) that died as the result of the intravenous inoculation of the cultures or toxin of bacillus icteroides, or both of these. In one instance, the toxin was injected both intravenously and into the substance of the liver. Omitting one dog, which was not autopsied, we have twenty (20) fatal results, with fatty changes in liver recorded in thirteen (13), or sixty-five per cent. Of these, one, reported by Sanarelli (No. 3), died within three hours and forty minutes after receipt of the injection, and "showed that the hepatic cells were already rich in fat drops." He does not state that there was any fatty degeneration present, and we can well believe that such was not the case.

[1] *Centralblatt für Bacteriologie*, etc., Band xxv, No. 18–19, 1899.
[2] "Le bacille Icteroide et Sa Toxine," *Archives de Medicine Experimentale*, No. 3, 1899.
[3] "Sul bacillo Icteroide" (Sanarelli), *La Reforma Medica*, vol. iii, No. 9, July, 1898.

[1] *Archives de Medicine Experimentale*, No. 3, 1899.
[2] *Il Policlinico*, vol. iv, No. 16 and 18, 1897.
[3] *Archives de Med. Exper.*, vol. ii, No. 3, May, 1899.

INJECTION OF DOGS WITH BACILLUS ICTEROIDES.

Observer.	No.	Quantity received.	Result.	Remarks.
Sanarelli....	1	10 c. c. of a 24-hour bouillon culture, intravenously.	Recovered.	
"	2	Agar culture diluted with 1 c.c. of a bouillon culture, intravenously.	Died during the same night.	Liver congested, but no fatty degeneration.
"	3	Agar culture diluted with 1 c.c. of a bouillon culture, intravenously.	Died in 3 hours and 40 minutes.	Liver shows numerous yellowish spots. Fresh sections in osmic show the hepatic cells already rich in fat drops.
"	4	5 c.c. of a bouillon culture, intravenously.	Died on 16th day.	Intense fatty degeneration of liver.
"	5	Agar culture diluted with bouillon—quantity not stated, intravenously.	Died during the same night.	Liver pale with zones of fatty degeneration.
"	6	2 c.c. of a bouillon culture, intravenously.	Died on 19th day.	Marked fatty degeneration of liver.
"	7	2 c.c. of a bouillon culture, intravenously.	Died on 8th day.	Fatty degeneration of liver.
"	8	5 c.c. of a bouillon culture, intravenously.	Died on 10th day.	Marked fatty degeneration of liver.
De Lacerda and Ramos.	1	1 c.c. of an agar culture diluted with 10 c.c. of sterilized water, intravenously.	Died during the same day.	No change in liver.
" " "	2	10 c.c. of an agar culture diluted with sterilized water, intravenously.	Recovered.	
" " "	3	20 c.c. of a bouillon culture into liver.	Recovered.	
" " "	4	20 c.c. of a bouillon culture 2 days old, intravenously.	Died on 19th day.	No autopsy.
" " "	5	35 c.c. of a bouillon culture 3 days old, intravenously.	Recovered.	
" " "	6	35 c.c. of a bouillon culture 1 day old, intravenously.	Died in 16 hours.	No trace of fatty degeneration.
" " "	7	18 c.c. of a bouillon culture 2 days old, and 38 days later 60 c.c. of toxin, both intravenously.	Died in about 8 hours after the 2nd injection.	Fatty degeneration of liver.
" " "	8	20 c.c. of a bouillon culture and 10 c.c. of the toxin, intravenously.	Died in 24 hours.	Liver and kidney of a blackish color. Nothing said of fatty generation.
" " "	9	60 c.c. of the toxin, intravenously.	Died during the same night.	Intense congestion of all organs. No fatty degeneration.
" " "	10	20 c.c. of the toxin, intravenously, and 20 c.c. into the liver.	Died in 24 hours.	Fatty degeneration of liver, kidneys, and heart.
" " "	11	70 c.c. of the toxin, intravenously.	Died at 1 o'clock of the same night.	Fatty degeneration of liver.
" " "	12	50 c.c. of the toxin, intravenously.	Died on 7th day.	Disseminated points of fatty degeneration but little advanced.
Reed and Carroll.....	1	5 c.c. of a 24-hour bouillon culture, intravenously, Sept. 24, 1897.	Died on 9th day.	Necroses in liver. Moderate fatty degeneration.
" " "	2	5 c.c. of a 24-hour bouillon culture, Nov. 16, 1897, and a second injection of 5 c.c. 14 days later, both intravenously.	Died in 28 minutes after second injection.	Slight fatty degeneration of liver.
" " "	3	2½ c.c. of a 24-hour bouillon culture, intravenously, Dec. 13, 1897.	Died on 9th day.	Marked fatty degeneration of liver.
" " "	4	5 c.c. of a 24-hour bouillon culture, intravenously, Feb. 9, 1898.	Recovered.	
" " "	5	5. c.c. of a 24-hour bouillon culture, intravenously, March 17, 1898.	Died in 52 hours.	Necroses in liver. No fatty degeneration.
" " "	6	5 c.c. of a 24-hour bouillon culture, intravenously, July 1, 1898.	Died in 16 hours.	Necroses in liver. No fatty degeneration.
" " "	7	5 c.c. of a 24-hour bouillon culture, intravenously, July 1, 1898.	Recovered.	

What he found in this liver may readily be found in the normal hepatic cells of dogs in a good condition of health and nutrition. We would, therefore, exclude this case as well as the case (No. 12) recorded by De Lacerda and Ramos, in which they found "disseminated points of fatty degeneration, but little advanced," in the liver. No results of the microscopic examination is given in this case to show what the true character of the "disseminated points" was, whether fatty or necrotic, and since it is not characteristic of fatty degeneration of the liver that it should be found in "disseminated points," we feel justified in also omitting this case. We will not do so, however, in order that we may not be accused of unfairness.

We thus find twelve (12) positive results against eight (8) negative results in dogs injected with bacillus icteroides. Of the positive results five (5) are recorded by Sanarelli in seven (7) animals that died (71.3 per cent.); four (4) by De Lacerda and Ramos in eight (8) dogs autopsied (50 per cent.); and three (3) by Reed and Carroll in five (5) deaths (60 per cent.). It will be seen that the percentage of cases showing fatty degeneration is highest in Sanarelli's experiments, due probable to the fact that his dogs lived longer, but that the percentage reported by De Lacerda and Ramos is less than that reported by ourselves. Since De Lacerda and Ramos are authorities quoted as sustaining Sanarelli in his observations concerning the frequent occurrence of fatty degeneration in dogs injected with bacillus icteroides, and since we have obtained this change in even a larger percentage of cases, it naturally follows that Sanarelli, in criticising us for our failure to produce fatty degeneration in the liver of dogs, was speaking as usual without any knowledge of the true facts, just as we have already pointed out that he has done in the matter of Selander's observations, and in the absurd statement that necroses in the liver of guinea-pigs and rabbits "are entirely specific for hog-cholera!" True we did state, and we wish here to repeat, that, with one exception hereafter to be given, the fatty change found in the liver of these dogs is not comparable to that found in the liver of human beings who have died of yellow fever, and we may add that there is an almost entire absence of that necroses of individual liver cells which is so prominent a feature in the human liver.

Sanarelli speaks as if yellow fever were the only condition in which fat is found in the liver cells. It is hardly necessary to remark that it may be present in considerable quantity in the livers of comparatively healthy individuals. Steatosis may mean little or much; it does not necessarily imply degeneration. Pathologists well know that in yellow fever the change that takes place in the liver is essentially one of *degeneration and necrosis*, in which the hepatic cells appear as denucleated bodies distended with minute fat-droplets and containing only a small amount of protoplasmic débris, or as somewhat refractive bodies, which stain brightly with eosin. Their outlines are very much distorted and the normal beam-work arrangement is no longer seen. Sanarelli's illustrations in Plate 10, Fig. 5, *Il Policlinico*, Nos. 16 and 17, 1897, prove that this degenerative and necrotic condition was not present in the livers of human beings inoculated with the toxin of his bacillus. In his section of dog's liver the arrangement of the liver cells is perfectly preserved, their nuclei stain well, and there is only a moderate deposition of fat in the cell protoplasm.

In connection with the production of fatty degeneration of the liver of dogs injected with bacillus icteroides, we desire to invite attention to the comparative degree of this change found in the case of dogs 531 and 928 of our series of experiments.

Dog No. 531, weight 17 pounds, was originally inoculated on February 9, 1898 with 5 c. cm. of a bouillon-culture of bacillus icteroides, from which he recovered. He was then subjected to intravenous injections of increasing doses until he was able to bear injections of 150 c. cm., of a bouillon-culture of this bacillus. On July 20, 1898, the animal had received 150 c.cm. of the culture, and died a few hours after the injection of the same quantity on July 29th. Thus this dog had received during a period of five (5) months and twenty (20) days, 1042½ c. cm. of a bouillon-culture of bacillus icteroides; yet at autopsy the liver was found to contain only a moderate amount of fat, and upon microscopic examination but slight fatty degeneration of the hepatic cells was to be seen.

On the contrary, dog 928, weight 19 pounds, was injected with cultures of the bacillus choleræ suis for the purpose of immunization, and received a total of 170 c.cm. during a period of four (4) months and five (5) days. The largest dose was 50 c.cm. injected on July 19, 1899, from which the animal died thirty-six hours later. At autopsy the liver was seen to be quite light in color, and upon microscopic examination the hepatic cells were found to be not only the seat of advanced fatty degeneration, but there were, also, to be seen many necrotic liver cells. Sections of this liver, indeed, show a stage of fatty degeneration and necrosis closely approaching that of yellow fever in human beings, and yet this animal was injected with bacillus choleræ suis! Or did we here again commit the deplorable error of "mixing the two micro-organisms"? Rather would we say that the important determining factor

in producing this fatty change was the difference in resistance of these dogs, and was not dependent on the particular variety of the hog-cholera bacillus with which we had injected them.

We observe, with some surprise, that Sanarelli does not comment on the remarkable agglutinative reaction which icteroides serum (supplied to us from Brazil, and presumably from animals inoculated with pure cultures of bacillus icteroides), exerts toward the hog-cholera bacillus. The scientific fact alone, *viz.*, that this serum diluted 100,000 times should arrest the motility and agglutinate another bacillus, should, we think, have momentarily attracted his attention; or is it possible that we here again got our cultures "mixed" and were really subjecting bacillus icteroides to the action of its own serum? Nor does he appear to have been impressed with the fact that the hog-cholera bacillus should so completely reproduce in dogs, not only the clinical picture of vomiting, rectal tenesmus, and profound prostration, but also death with extensive hemorrhagic changes in the stomach and intestines. We trust, however, that he will later procure a culture of the bacillus choleræ suis and give us the result of his observations with it on various animals. In the meanwhile, we beg to observe that Agramonte,[1] working in this laboratory for a period of four months, was unable to detect any differences between the "mixed" culture with which we, unwittingly, supplied him, and a bacillus which he had recovered in Cuba from yellow-fever cadavers, and which he identified as bacillus icteroides (Sanarelli).

Concerning the statement made by us in our preliminary note that bacillus icteroides and bacillus choleræ suis both resisted extremely low temperatures, we had not intended to "set this down as one of the characteristics of bacteria by which they might be recognized," since we did not know any bacterium that would not withstand low temperatures. We were only dealing with *bacillus icteroides as the supposed specific cause of yellow fever*, and since by a natural law the specific agent of this disease is arrested and destroyed by a temperature less protracted, and considerably less in degree, than the temperature required to destroy bacillus icteroides, we were justified in emphasizing this fact. We leave, however, to F. G. Novy, the easy task of answering this part of Sanarelli's article.

At the time we began our experiments with feeding bacillus icteroides to young hogs we were well aware that every precaution should be taken to avoid error in experiments on these animals, as emphasized by Welch and Clement.[2]

[1] *Centralblatt fur Bacteriologie*, etc., Band xxv, No. 18–19, 1899.
[2] Proceedings First Veterinary Congress of America, Chicago, 1893.

Our first experiment was made in a room where a dog had already died some weeks before from the intravenous injection of bacillus choleræ suis. On this account we did not attach too much importance to this observation. We proceeded at once, however, to procure a second-story room with cemented floor which had never been used for animal experimentation. We had it thoroughly wiped out with a disinfectant solution; we also covered the windows with mosquito-netting in order to prevent the ingress of flies. A new broom and mop were provided for this room. We placed therein four new wooden boxes, and in each of these we put a young hog on April 6, 1899. These animals had been purchased in open market, and were fat and healthy in appearance. April 8th, after withholding food for twenty-four hours, two of these pigs were fed with a twenty-four-hour-bouillon culture of "bacillus icteroides, original," passed through one guinea-pig for the purpose of ascertaining whether the bacillus grown on agar for a period of seventeen months was still virulent or not. On April 10th, 1899, the remaining two pigs were fed, under like circumstances and with a culture of bacillus icteroides having the same source. The culture of bacillus icteroides was in each case mixed with a small quantity of milk brought directly from the dealer. The temperature of the hogs was taken both before and after feeding, and we were careful to have the thermometer placed in a disinfectant solution immediately after being used. The hands of the attendant were also carefully disinfected on each occasion. Under these conditions, and with these precautions, the four animals promptly sickened and died, as shown in the following table:

Careful cultures were taken in each case from the several organs, the blood, bile, and mesenteric glands. From the liver in one case, and from the mesenteric glands in all other cases, colonies of a small, quite motile bacillus were obtained. This babillus was promptly agglutinated by high dilutions of Sanarelli's serum. From the other sources cultures were negative.

Now we think that looking at these experiments critically, there were two chances for error to have crept in; but not through lack of technical precautions or neglect on our part. In the first place, having injected the guinea-pig with "bacillus icteroides, original," we might have recovered the hog-cholera bacillus from his blood and organs, but this hardly seems probable. Our cultures were pure from this guinea-pig, and we have every reason to believe that we recovered bacillus icteroides. In the second place, as we only kept our young hogs for a few days before feeding them the culture, we

YOUNG HOGS FED WITH BACILLUS ICTEROIDES.

No.	Date.	Quantity.	Result.	Lesions.	Remarks.
976	Apr. 8, '99.	25 c.c. 24-hour culture.	Died on 9th day.	Diphtheritis of stomach and large intestine.	Diarrhea and fever April 10th, with thin, pea-soup stools. Weakness of hind extremities.
977	Apr. 8, '99.	15 c.c. 24-hour culture.	Died on 6th day.	Ulcers on lips; hyperemia of fundus of stomach; ulcerated Peyers patches; follicular ulcers in large intestine with cork-lining exudate.	Diarrhea and fever, beginning April 10th. Emaciation; loss of strength in hind legs.
978	Apr. 10, '99	20 c.c. 24-hour culture.	Died in 7 days.	Congestion and ulceration of mucosa of stomach. Ulceration and diphtheritis of cecum and colon.	Diarrhea April 11th and succeeding days. Emaciation. Loss of strength in hind extremities.
979	Apr. 10, '99.	15 c.c. 24-hour culture.	Died in 12 days.	Erosions on tongue. Diphtheritis of stomach and esophagus. Ulcers in stomach, small intestine, and cecum. Numerous small circumscribed thickenings in submucous layer of large intestine. The centers of some of these already undergoing necrosis.	Same clinical symptoms, beginning on April 12th.

cannot say that some one of these hogs may not already have been infected with the hog-cholera bacillus. They were bought in an open market, and we kept no controls for these first experiments, not being able to obtain pigs from the same litter. But admitting this chance for error, we can hardly believe that *all* of these hogs were already so badly infected with the hog-cholera bacillus that they should die within twelve days from the feeding, and that the symptoms of illness, such as diarrhea and loss of appetite, should have so promptly appeared after the inoculation with bacillus icteroides. If the hog-cholera bacillus were present in one, it was present in all, and it is remarkable that the disease should have run such an acute course after natural infection. We are informed by the dealer from whom these pigs were purchased that they had been in his possession for about a week when sold to us. He also has stated to us that during the present year, although retaining his hogs for periods varying from a few days to several weeks, he has not had any pig sicken or die on his hands.

We think, therefore, that we were quite justified, as the result of these experiments, in expressing the opinion that bacillus icteroides was a variety of the hog-cholera bacillus. We may state that nothing has occurred since the publication of our preliminary note to cause us to change this opinion; but that our subsequent results, such as the immunization of guinea-pigs with gradually increasing doses of the dead culture of bacillus icteroides against a fatal dose of the hog-cholera bacillus, and securing the same result by injections of the dead cultures of the latter bacillus against a fatal dose of bacillus icteroides, have rather confirmed us in that opinion.

We have also been permitted to study sections of the liver from the case of a soldier who died in Havana during the present year, and from the microscopical findings we are strengthened in the belief that bacillus icteroides should be considered as a secondary invader. From the blood of this case during life, bacillus icteroides was recovered both by the members of the Havana Commission and by A. Agramonte.[1] This bacillus was also obtained on cultures after death by the same observers. It is important to note, however, that from the spleen, after death, the typhoid bacillus was also obtained by Agramonte. Careful study of sections of the liver in this case shows an entire absence of fatty degeneration, while many areas of necrosis, such as characterize the liver of typhoid fever, are to be plainly seen. In other words, bacillus icteroides, though present during life in this patient's circulation, failed to bring about that "acute steatosis" upon which Sanarelli lays so much stress.

We hope, at an early date, to present our complete report to Surgeon-General Sternberg.

Smallpox at Niagara, Falls.—The spread of smallpox at Niagara Falls, New York, continues. Two new cases were reported on September 1st. The disease gained a foothold largely because cases of smallpox were diagnosed as chicken-pox.

[1] *Centralblatt für Bacteriologie*, etc., Band xxv, No. 18–19, 1899.

CARDIO-ESOPHAGEAL GUSH AND CLICK.[1]

BY R. G. CURTIN, M.D.,
OF PHILADELPHIA.

IN studying the sounds heard in and around the heart I have observed two a description of which I have not been able to find in the literature coming under my eye. I have every reason to think that they are extra-pericardial and, furthermore, I am quite sure that they are esophageal. In this paper you will be introduced to these two sounds, both of which are synchronous with the action of the heart; and from their many points of similarity I think they may be studied together. I will call them the cardio-esophageal gush and click. A study of the histories of the two classes, with their two sounds, will be the best way to introduce the subject.

IN 1894 a girl, nineteen years old, called at my office, saying that she had a queer noise which a doctor had told her was a heart murmur that he could hear without applying the ear to the chest. She informed me that it was not so loud that day, for she could not hear it. I listened to her chest and found a mild, double, mitral murmur, with evidence of some hypertrophy. She then complained of dyspeptic symptoms only. I told her to return to me if the sound came back, which she did next day. I could then hear a sound with the action of the heart, which was then excited; and, on withdrawing my ear one yard away from the chest, I could hear the sound, which was before or early in the systole, when her mouth was open. When she closed her mouth the sound was very perceptibly deadened. It continued when her breath was held. On applying the ear to the chest the sound was subdued, being less distinct than when the ear was held in front of the open mouth. It sounded like a short gush of air from the throat modified by the upper air passages, giving it a low-pitched, grunting sound. I could get no sound at the epigastrium and there was no apparent effort of the diaphragm or abdominal walls as if expelling flatus from the stomach. The sound continued while she was talking and breathing. It did not appear to be a moan or grunt or like a regurgitation of air from the stomach.

I gave her some potassium bromid, tincture of nux vomica, and compound tincture of cardamon and mint water. She called next day and I found that the heart had quieted down and that the gushing sound was absent. She said that after the first dose of medicine the heart quieted down and the sound promptly disappeared.

A second case was that of a man about sixty-two years old, with dilated left and right ventricles. The sounds heard were similar to those heard in the case first reported and could be easily distinguished across a room. The sound had all the characteristics given in Case I. A short time later the patient died suddenly. No post-mortem examination was held.

Dr. J. Chalmers Fulton of Philadelphia told me that he had a case which I firmly believe to have been like the two cases that I have just reported of the loud, esophageal sound. I was to have seen this patient with the doctor, but he was absent from home the day we called. A short time afterward he was taken sick and died. The history is as follows: He was an old soldier. For years he had a continuous, grunting, nasal sound, synchronous with the heart's action. The sound was audible a great distance from the body. Dr. Fulton said that on a still day he had heard it across the street. It was much more audible when the mouth was open, and after taking a drink, or when excited. In fact, anything that increased the action of the heart seemed to increase the sound.

I examined the heart, which Dr. Fulton removed after death, and found nothing, except that it was generally hypertrophied. Two skilled pathologists examined it and informed me that there was nothing in the arrangement or construction of the papillary muscles, tendons, valves, or any other part of the heart to account for any abnormal sounds. From the history and the post-mortem returns I feel satisfied that this case was one similar to the two before reported.

In this class of cases the sound was diagnosticated in two instances as being of endocardial origin. It is true that the subjects all had organic heart disease, causing enlargement of the organ, but the sound heard so plainly was evidently exocardial. The sound seemed to be from the esophagus or, at any rate, from the fauces. I cannot understand how the heart could be powerful enough to force air out of the lungs with sufficient rapidity to cause so loud a sound especially during inspiration. It has occurred to me that in some of the individuals reported as having had extraordinary loud murmurs during life, without pathological changes being found after death, the case might have been of the kind here reported. Two were so considered by the medical attendants.

The sound always suggested the expulsion of a small quantity of air. My reasons for believing that it is an esophageal sound are: First, it seemed to come from the fauces; second, closing the mouth muffled the sound; third, on auscultation it was heard down to the middle of the sternum, and not

[1] Read at the sixteenth annual meeting of the American Climatological Association, held at New York, May 9, 10, and 11, 1899.

below that point. The only explanation that occurs to me which seems at all plausible is that the heart in diastole pressed out of the esophagus a small amount of air, which was re-admitted during the contraction or systole of the organ. At one time I thought it might be that the contraction of the heart opened the gullet so as to allow the escape of flatus from the stomach, but this thought was dispelled when I considered that the stomach could not possibly furnish gas enough to continue the sound for days or, as in one case, for years.

Esophageal Clicking. — This is a short, sharp, clicking sound heard generally at the end of expiration. It is plainly audible as coming from the fauces and is quite evanescent, being clearly distinguishable to-day and gone to-morrow. It is absent before a meal and present during digestion. This sound has all the peculiarities of modification of the louder, gushing sound, being dulled by closing the mouth. I have noticed this clicking in several cases.

One case in my own family I have studied very carefully and for a number of years. When the subject was twenty-five years of age this clicking sound was often noticed with the action of the heart toward the end of expiration, when one, two, or three small, sharp clicks were heard, stopping as soon as the next inspiration began. This sound was often noticed after a full meal, drinking of stimulants, active exercise, and especially after riding rapidly on the back of a rough-trotting horse. It was sometimes noticed after lying down at night without any assignable cause. The sound was subdued by closing the mouth and generally stopped by curtailing the respiration. A forced, held expiration increased the number of clicks. In this case there was no evidence of hypertrophy of the heart or any endocardial disease.

To my personal knowledge the patient had this sign more or less for thirty-eight years, it being absent for years at a time. This is one of three or four cases that I have seen. In all the cases the clicks were interrupted by inspiration.

This sound is so slight that it might be present and not be noticed by the physician or the patient. Therefore, I suppose that it is more common than the louder sound, as I have never had a patient sent to me in whom it was previously detected by a physician. My explanation of this click is that it is caused by the separation of two moist surfaces. That the heart causes it is proven by the fact that it keeps time with the heart's action. I find in the case reported that it occurred about the time of the systole of that organ. In this connection it may be of interest to state that Dr. J. J. Walsh of New York has called my attention to the fact that Bernhardt of Berlin has reported cases of clonic contraction of muscles, giving a sound or click in the ear, attributed to this clonic contraction of muscles in the neighborhood of the Eustachian tubes. These sounds could be heard at a distance from the ear and occurred as often as 80 to 120 times a minute without reference to the heart's action.

There is another faucial clicking sound which is quite common. It occurs with each round of respiration and is frequently found in subjects with old pulmonary cavities especially near the apices. This click also comes from the fauces but can be easily differentiated from the click here described by observing that it occurs with each respiration and is not synchronous with the heart-beat. I am inclined to think that these two unusual sounds that I have described are produced by the action of the heart on the esophagus; so I have presented them together in this paper.

Let us look at the anatomy of the parts: The esophagus, as found in the post-mortem room, is contracted and flattened. The walls are flaccid, having no elasticity. The position of the esophagus is found to be directly behind the heart with a small intervening space between it and the left auricle and left ventricle. They are so close that the heart has been wounded by foreign bodies which first became lodged in the esophagus. The aorta is at the side and not far away. Anatomists inform us that Trutz has found between the pericardium and the anterior surface of the esophagus a muscular slip or band. It occurred to me that if this muscular slip were abnormally developed it might influence the esophagus provided the pericardium were adherent. The study of the anatomy of the parts does not throw much light on the subject under consideration. If the esophagus were an elastic tube the explanation would seem to be easy. A mediastinal tumor, with a rigid esophagus, might introduce conditions that would assist us in our explanation of the loud sound which we are considering. You will remember that in all the three cases in which the sound was heard the heart was enlarged.

Recapitulation.—1. The sounds were heard at the beginning of the systole of the heart and, in two cases, diagnosticated as an endocardial murmur.

2. The sounds of both were modified by respiration, being heard most markedly at the end of expiration.

3. They were all more or less evanescent, except in the case of the old soldier.

4. They were increased or developed by a full stomach, stimulants or excitement.

5. The sounds were increased by opening the mouth, and dulled by closing it.

6. They were heard by auscultation at the middle of the sternum, but very much subdued as compared with the sound heard at the open mouth.

7. The sound was not transmitted in any direction from mid-sternum.

8. They were not heard by auscultation over the stomach.

THE HYDRIATIC TREATMENT OF PNEUMONIA.[1]

BY RICHARD K. MACALESTER, M.D.,
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IN the limited time allotted to me for the discussion of hydrotherapy in pneumonia I shall endeavor to cover as much ground as possible by presenting in the form of a brief *résumé* the well established data of this rather extensive subject. Those wishing to familiarize themselves with details will find this branch of therapeutics elaborately treated in a recently published book by Dr. S. Baruch of New York,[2] to whom indeed, as to Winternitz in Europe, great credit is due for the development and propagation of hydrotherapeutics in this country. I was fortunate enough to have had instruction from both the aforenamed authorities, from which, as well as from their writings, I shall quote freely without special reference in this paper.

Many observers of the widest experience in the treatment of pneumonia by various methods extol the virtues of hydrotherapy, and comparative statistics demonstate its therapeutic efficiency. Thus for instance, Fenwick of the London Hospital in an analysis of 1000 cases of pneumonia met with failure in but 10 per cent. of those treated by various cold applications, whereas the mortality was double as great when other methods were employed. In J. Hood Wright Memorial Hospital, New York, the total mortality from pneumonia has been reduced more than one-half since hydriatic treatment has been adopted. Penzoldt, from the experience of an enormous material of 2200 cases of pneumonia in children, concludes that preference should always be given to a cautious bath treatment.

By first considering some of the physiological effects of cold applications to the body surface we can best judge as to their applicability and to what extent they meet the therapeutic indications in pneumonia. A moderately cold application to the skin causes a primary contraction of the cutaneous vessels which is followed by a tonic, active, dilatation in contrast to the passive hyperemia produced by warm procedures (as for instance, poultices). The latter relax the vasoconstrictors giving rise to a stasis, whereas cold stimulates the vasodilators, producing an active hyperemia, with maintenance of vascular tone and improved circulation. Mild, cold procedures, such as usually employed in pneumonia, act reflectively through stimulation of the cutaneous nerves, on the centers in the central nerve system, and thence upon the functional activity of various organs. The respiratory system is stimulated and inspiration deepened The effect on the circulatory system is stimulation of the heart action (evinced by more forcible ventricular contractions), and neurovascular excitation, in consequence of which arterial tension is raised and the blood propelled with greater velocity and force. The general condition is invigorated and refreshed and cerebral activity stimulated. The secretory organs evince greater activity, the amount of secreted urine, for instance, increasing considerably. Owing to the compensatory powers of the body, internal temperature is not materially influenced in health.

By applying the foregoing data, it will be seen that the therapeutic requirements in pneumonia are well fulfiled, and that hydriatic treatment is based on a sound *rationale*.

The therapeutic indications are: (1) To stimulate and invigorate the nerve-centers with a view to enhancing the patient's vital powers; (2) to prevent and control heart failure; (3) to reduce temperature; (4) to eliminate toxins (Baruch).

1. The stimulating action of cold applications on the nerve-centers is reflected to organs of vital importance, upon whose functions the patient's resisting powers to the toxic substances, generated by the the diplococcus pneumoniæ Fraenkel, are dependent. Soon after applying cold the patient grows calmer, respiration deeper and more regular, dyspnea is relieved, and expectoration facilitated. There is also improvement of appetite and sleep, and in the functions of the skin and kidneys.

2. Heart failure, the most dreaded complication in pneumonia, is better averted by hydriatic measures than by any other available means. The heart action is aided and maintained in the following manner: The active hyperemia of the skin, following the rapid, primary contraction of the cutaneous vessels, relieves the heart at once by broadening the stream in the cutaneous capillaries. At the same time arterial tension is raised, as proved by the better filling of the radical arteries, and a freer, unembarrassed pulmonic and systemic circulation is established. When we consider the enormous vascular area of the skin, estimated as being capable of hold-

[1] Read at the annual meeting of the Colorado State Medical Society, held at Denver, June 20–22, 1899.

[2] S. Baruch, "Hydrotherapy," Wm. Wood & Co., New York, 1898. See also "Hydrotherapy in the Pneumonia of Children," MEDICAL NEWS, November 19, 1898, and Winternitz, "Die Hydrotherapie auf Physiol. und Klin. Grundlage," Vienna and Leipsig, 1890.

ing 30 to 50 per cent. of the entire blood of the body, we can readily realize that this is a mighty source of depletion.

3. The fact that pneumonia patients are extremely susceptible, and that their temperature may be easily reduced by cold procedures, necessitates great care and precaution in the application of such measures. Although high temperature may be an important element in pneumonia and other infectious diseases by imposing more work on the heart, and adding greatly to the patient's discomfort, still it is by no means the chief danger. As I have often insisted, in discussing the matter, fever is but a symptom of disease, indicating the reaction on the part of the organism in its struggle to overcome the infection process. If vitality sinks so low as to offer no resistance to the toxemia, there is no fever, and the patient collapses at once, an occurrence which we have all had occasion to observe in lethal cases of pneumonia. Therefore, the indiscriminate administration of antipyretics with a view of reducing temperature, and thereby meeting the principal therapeutic indication, is as fallacious as is the idea, so deeply rooted in the professional mind, that the main attribute of hydrotherapy in febrile diseases is reduction of temperature.

4. The support that cold applications give to the nervous system, raising the patient's vitality and the functional activity of various organs, is conducive to the elimination of toxins.

The Hydriatic Method in Pneumonia.—Owing to the susceptibility of pneumonia patients to cold, the milder hydriatric procedures, such as the cold chest-compress or the wet pack, are indicated n general. Furthermore, these are more easily applied and controlled, and are attended by less agitation, disturbance and exertion on the patient's part. In the experience of others, as well as in my own, the milder measures are indeed quite adequate to fulfil all the therapeutic requirements in both the croupous and catarrhal pneumonia of adults. The cold chest-compress is preferable to other procedures in pneumonia, a conclusion I had reached independently some time ago, and which I now find is in harmony with the opinion of some others. Its correct application, as of all hydriatic procedures, requires some experience and care, therapeutic failures being usually due to faulty technic. The chest-compress is composed of three folds of linen or old muslin cut in a manner to fit the entire chest, from above the clavicles down to the umbilicus, with slits in the axillary regions to form flaps and cover the shoulders. It is then wrung out of water, so that it does not drip, at a temperature of 60° F., snugly applied around the thorax, covered with a piece of closely woven, thin flannel of the same shape but at least an inch wider in all directions, and secured by safety-pins. At first the compress is changed every half hour, then every hour or two, until the patient's temperature is below 100°, when it may be discontinued. The compress should not be covered with oiled silk, a very popular proceeding on the part of attendants for the sake of convenience and protection of the patient's bed and clothing, as this would convert it into a poultice and deprive it of its stimulating and gradually cooling action.

The wet pack, at a temperature of 60° to 70° F., being a somewhat more severe procedure than the chest-compress, is indicated in the graver forms of pneumonia with high temperature. It is a very popular and efficacious method, has warm advocates, and deserves special mention.[1]

Other hydriatic methods in pneumonia advocated by prominent observers are cold full-baths (temperature 60° to 70° F.), tepid baths (90° to 92.5° F.) both with or without friction and ablutions, ice-packs, the ice-cradle, cold sponging, etc.

In the pneumonia of children, the same methods as just enumerated for adults are employed in somewhat modified form. The child's sensitive nervous organization, with its greater susceptibility to cold and the development of nervous symptoms, and the minor resisting powers of the heart, as compared with the adults', render sound judgment in prescribing and extreme care in the application of hydriatic procedures imperative.

In my experience, based on the observation of a considerable number of patients treated during my practice in New York, the cold chest-compress alone proved a reliable and adequate remedy in the vast majority of cases. For children under three years of age Baruch favors tub-baths of 5 to 8 minutes' duration, with continuous friction, at a temperature of 95° F., gradually reduced to 85° or 80° F., according to the body temperature, whereas in older ones preference is given to the cold chest-compress. He also recommends the copious administration of cold water at regular intervals in the pneumonia of both children and adults, and I need scarcely add that a hygienic régime should be strenuously adhered to.

Epicrisis. — The virtues of hydrotherapeutics, being based on sound principles and scientific clinical evidence, entitle them as much to adoption by the profession at large as do the popular medicinal remedies in routine practice. I do not presume to say that drugs can be dispensed with; they have their place and field of usefulness; but their pro-

[1] While I was attending Professor Winternitz' clinic in Vienna this method was employed extensively in pneumonia with excellent results.

longed administration is often depressing, nauseating, or toxic, to the one or other organ, and they do not always fulfil the requirements of judicious treatment. In support of this view and in connection with the pneumonia of children allow me to detail an illustrative case from my past experience:

H. R., a well-developed girl, three and a half years old, was taken ill after measles with pneumonia five days previous to my first visit. I saw at a glance that her condition was very serious, and on examination found the entire and middle lobe of the right lung consolidated. Her temperature was 103.2° F., her pulse scarcely appreciable, approximately 160 per minute, her breathing rapid, superficial and obstructed, her lips and extremities markedly blue from cyanosis, and she was failing fast. On inquiry I ascertained that she had been given various kinds of medicines, all of which were inefficacious, had vomited during the previous two days, and it was with difficulty that any nourishment could be retained. I demonstrated to the parents how to use the cold chest-compress by applying the first one myself and prescribed a simple expectorant. In about an hour improvement began; the cyanosis disappeared, the pulse became stronger and slower, the respiration deepened, and, in short, the child was actually resuscitated. Shortly afterward she fell into a peaceful sleep. From then on she progressed uninterruptedly, and was convalescent two days later.

In conclusion, I ventured to state that anybody who has witnessed a few such transformation scenes as the one just described, resulting from the correct application of water after medicinal agents have proved futile, will become a convert to hydrotherapy.

A NEW METHOD OF TREATING COMPLETE TEAR OF THE RECTOVAGINAL SEPTUM BY TURNING DOWN AN APRON INTO THE RECTUM AND BY BURIED SUTURE THROUGH THE SPHINCTER MUSCLE.[1]

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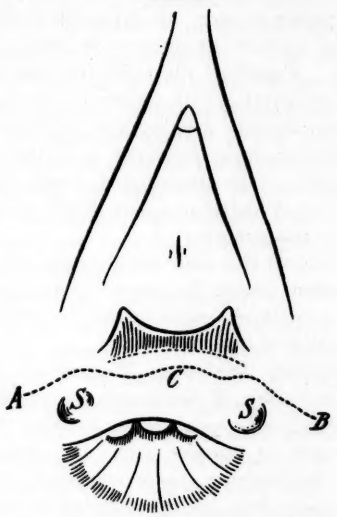
PROFESSOR OF GYNECOLOGY IN THE JOHNS HOPKINS UNIVERSITY.

IN a paper published in the first number of the *Johns Hopkins Hospital Bulletin* of the current year I endeavored to impress upon the profession the importance of treating complete tear of the rectovaginal septum by dissecting out and liberating the buried sphincter ends, and then by uniting the freed ends by two or three interruptured catgut sutures buried with the muscle in the septum. I also showed the entire practicability in these cases of passing a splinting silkworm-gut suture directly through the center of the muscle, so as to take the tension off the buried catgut sutures, instead of passing the splinting suture well behind the muscle as in the Emmet operation.

Since the presentation of that paper with report as of series of cases which were destined to show that the immediate results of the new method were different from and remarkably better than those obtained under any previous plan, I have devised the following procedure as an additional and final step in the treatment of these cases.

The plan of turning down the flap toward the bowel did not originate with the writer. I am indebted to the courtesy of Dr. James R. Chadwick of Boston, who has called my attention to the fact that a procedure identical in all important particulars has been described by Dr. James Collins Warren of Boston in the *Boston Medical and Surgical Journal* of January 3, 1878, and in the *Transactions of the American Gynecological Society*, vol. vii, 1882. It only adds to the value of the method

FIG. 1.



to know that the credit of the invention belongs to our distinguished fellow-countryman, Dr. Warren, and I am glad to learn that instead of being new it has already stood the test of trial at his hands.

Dr. Warren's description in every important particular covers the points I would make, leaving as original in my procedure two things: First, the combination of a flap turned down into the rectum with the buried suture to the dissected sphincter; and, second, the use of figure-of-eight sutures buried in the septum to do away with the dead central space.

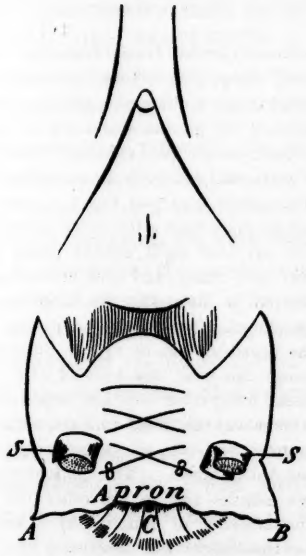
The method for performing the operation is as follows: The area to be denuded is outlined by making the basal incision across the septum on the vaginal side in advance of the sphincter ends, and at least 1 cm. in advance of the margin of the rectal mucosa. The denudation then extends up into both vaginal sulci in the usual manner. The important point in which the operation differs from the ordinary Emmet procedure, generally employed, lies in the treatment of the undenuded portion between the

[1] Abstract of a paper read at the Twenty-fourth Annual Meeting of the American Gynecological Society, at Philadelphia, May 23, 24, and 25, 1899.

basal line and the rectum. Instead of cutting this off in strips, it is dissected loose from above downward and turned down toward the rectum like an apron. The purpose of this fold or apron is to protect the broad wounded surface in the septum from any contamination on the side of the bowel, which it does in the following manner: As soon as the stitches are passed which bring the septum together from side to side, the apron of tissue is also folded loosely together and turned down toward and sometimes projecting entirely from the anal orifice. This at once protects the septum from infection, as every movement of the bowels only tends to push this curtain down and out, and no longer tends to force fecal matter up between the stitches. This natural tendency of the apron to protect the septum is reinforced by a series of delicate sutures uniting the edges. I have sometimes even left these sutures long and fastened them outside so as to hold the margins of the wound out on the surface of the body, in this way entirely doing away with any wound on the rectal surface, and robbing the operation of its only serious complication.

I next proceed to make a separate dissection of the sphincter ends by setting them free in the manner described, and when this is done the suturing is begun by drawing together the internal sphincter, which is well exposed, by a series of figure-of-eight sutures extending well up into the septum and obliterating entirely the

FIG. 2.

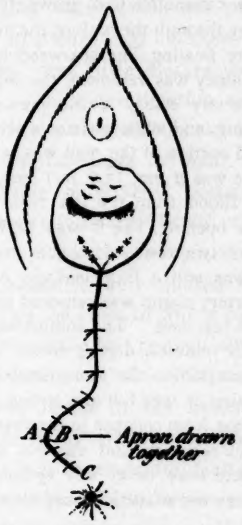


dangerous dead central space. Three or four of these figure-of-eight sutures applied in this way take the place of three times the number of interrupted sutures as formerly applied on the side of the rectum.

After closing the central portion of the septum by the figure-of-eight sutures, the sphincter ends are united by three interrupted catgut sutures. I next apply the sutures to the sulci, then to the perineal surface, using one or two silkworm-gut sutures for splinting purposes. Then, finally, I unite the edges of the apron seen projecting from the anal orifice by some very fine silk or catgut sutures.

The advantages of this operation are, first, that it secures immediate good sphincter control, and, second, that it removes from the operation the complication occasioned by the wound on the rectal surface.

FIG. 3.



MEDICAL PROGRESS.

The Eruption of Typhoid Fever.—BROWNSON (*Charlotte Med. Jour.*, July, 1899) discusses the question of spots in typhoid fever. Inquiry of his medical associates revealed the fact that most physicians practising in the mountainous part of North Carolina regarded the eruption in typhoid as a rare exception. Painstaking examination in a large number of patients convinced him, however, that this opinion was an error and that typical spots are present in at least fifty per cent. of the cases. He rejects the idea that the presence of these spots in typhoid ndicates that the patient has suffered or is suffering from malarial infection.

Outbreak of Secondary Carcinomatous Nodules, Thirty Years after Operation.—HEURTAUX (*Arch. Prov. de Chir.*, No. 2, 1899) cites an illustration of the very long interval which may exist between an operation for cancer and the development of secondary nodules. The patient in question was a woman whose breast and axillary contents had been removed on account of carcinoma thirty years ago. After that long period of immunity there appeared in the scar and its neighborhood, in the axilla, and finally in the thorax and vertebræ, multiple nodules of carcinoma, which grew with great rapidity. Heurtaux was satisfied that they did not represent a new carcinoma, but that they developed from the seeds of the former tumor, which had lain dorment all those years.

Resection of a Part of the Vena Cava for Carcinoma.—MANTEUFFEL (*Centralbl. f. Chir.*, July 8, 1899) removed the carcinomatous right kidney of a man aged forty-nine years. The vessels were ligated in two places and divided. The kidney remained attached to the vertebral column by its lower pole. A careful examination showed that the carcinoma had grown from the lower end of the kidney through the wall of the vena cava, and that masses were floating like sea-weed in the venous stream. The kidney was removed, the vein compressed above with an artery clamp whose jaws were covered with rubber tubing, and while assistants held the vein below, the affected portion of the wall was removed. The opening so made was 9 cm. (3.6 in.) long, and 2.5 cm. (1 in.) wide. Blood from the left renal vein spurted freely from this opening, but it was held in check by compression until two rows of stitches had been put in place. There was still a little leakage, but this ceased as soon as the artery clamp was removed and the normal venous flow was resumed. The compression of the cava had lasted fifteen minutes, during which time the pulse was scarcely perceptible. In two minutes after the removal of the clamp it was full and strong. The patient suffered somewhat from collapse in the first twelve hours, but made a quick recovery, and was out of bed in eighteen days. There were never any symptoms which indicated circulatory disturbance of any character.

The Right-Angle Continuous Intestinal Suture.—CUSHING (*Boston Med. and Surg. Jour.*, July 20, 1899) uses fine white silk, machine twisted, J. D. Cutter No. ooo, for intestinal suture. The needle is inserted at about one-eight of an inch from the cut edge and emerges parallel to the cut edge at the same distance from it. It is withdrawn and a similar stitch taken in the other cut edge of the bowel. This procedure is repeated until the whole circumference of the bowel has been sutured. Tests have shown that this continuous Lembert suture, as it is sometimes called, affords an exact approximation capable of withstanding pressure from within sufficient to rupture the gut. The mesentery is united by interrupted sutures. The silk is sterilized by boiling and preserved in ninety-five per cent. alcohol containing one-tenth per cent. of corrosive sublimate. The best needle is a self-threading or spring-eye, round sewing needle, $1\frac{1}{16}$ of an inch long, the point of which has been ground flat like the Hagedorn needle.

THERAPEUTIC NOTES.

For Chronic Bronchial Catarrh.—

℞	Bals. peruviani		ʒ iss
	Pulv. myrrhæ		ʒ iii
	Ext. opii		gr. xxx.

M. Ft. pil. No. CL. Sig. Two to 4 pills every two hours.—*Marcus.*

Treatment of Purulent Rhinitis in Children.—WALSHAM, in "Nasal Obstruction," says that the general health should be improved by the appropriate treatment of any digestive disturbance which may be present, and by the administration of cod-liver oil and the syrup of the iodid of iron—the last-named drug being of the greatest utility. If the oil is not well borne, small doses of Maltine may be used as a substitute, or the syrup of the iodid of iron be used alone. The local treatment should comprise the use of cleansing agents, Dobell's solution, or weak antiseptic sprays, solutions of boric acid, bichlorid of mercury or listerine, to be used every four hours, and the mucous membrane subsequently astringed by the use of sulphocarbolate of zinc, or a spray of menthol and eucalyptol (10 per cent.) in paroleine or olive oil, or by dusting with iodoform, iodol or boric acid. If the discharge, which may persist for a long time, does not yield to this plan of treatment, the existence of some condition such as the presence of a foreign body, should be suspected, and will probably be revealed by careful and thorough investigation.

Massage for Uncontrollable Vomiting of Pregnancy.—GEOFFROY (*Centralbl. f. Gyn.*, July 8, 1899) says that the uncontrollable vomiting of pregnancy is caused by reflex contraction of the intestinal tract. This action is localized in various parts of the small intestine, but especially in the ileopelvic angle of the colon. Painful contractions at this point are pathognomonic of reflex hyperesthesia of the alimentary canal, the symptoms of which are either cardiac pain, or temporary or continuous vomiting. Light massage judiciously applied to the colonic flexure will relieve these symptoms, according to the experience of the author in several cases.

Incontinence Cured by Gradual Vesical Distention.—HAVEN (*Bost. Med. and Surg. Jour.*, June 15, 1899) mentions two cases of incontinence in older girls which he succeeded in curing completely by gradual distention of the viscus with a four-per-cent. boracic-acid solution. Both patients were eighteen years old, and both from earliest infancy had wet the bed nightly, and had found it impossible to retain the urine for more than a few minutes while awake. The bladder of one held eight ounces under pressure, that of the other only three and one-half ounces. The treatment consisted in distending the bladder until discomfort was produced, after which the patient held the fluid as long as possible—ten or fifteen minutes in the beginning, though this time was doubled later. Distention was practised every other day, and improvement was rapid. Treatment was continued until the bladder would hold twenty ounces, and then all symptoms having been relieved, it was discontinued. The elapsed time in one case was three months and in the other five months. There was no evidence of abnormality in either case, other than that the bladder was small.

For Dyspepsia, when due to lack of tone of the muscular coat of the stomach:

℞	Pulv. ipecac.		gr. iv
	Potass. sulphat. } aa		gr. x
	Potass. nitrat. }		
	Sodii bicarb.		ʒ i.

M. Div. in chart No. XII. Sig. One powder in water 5–10 minutes before meals.—*Mathieu.*

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OF MEDICAL SCIENCE.

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SATURDAY, SEPTEMBER 9, 1899.

CONVULSIONS IN CHILDREN.

WHEN a period of intensely hot weather occurs late in the season and severe intestinal diseases develop in children as a consequence, it has been noted that their ailments are more frequently complicated by convulsions than under similar circumstances earlier in the summer. The wear and tear of life during the difficult heated months has apparently augmented the almost normal instability of the infantile nervous system, and as a consequence convulsive explosions of nerve force are to be expected. An interesting discussion of convulsions in children at the recent meeting of the British Medical Association brings out the present English views as to the etiology and treatment of the affection, and it seems a timely topic for the attention of all general practitioners.

Drs. Gossage and Coutts, to whom the subject was referred for special consideration and introduction to the Section, suggested in their conclusions the following points for discussion: First, the frequency of convulsions in children has been vastly overrated; second, the immediate danger from a fit has been overrated, while the danger as regards future neurotic manifestations has been underestimated; third, the predisposing causes are of much more importance than the exciting causes; the slighter exciting causes will not produce convulsions except in predisposed children.

There was very little disagreement with these propositions. The overestimation of the danger of convulsions, it was pointed out, came from the fact that in the terminal stages of many diseases of infancy convulsive movements occur, and that the death was then, unwarrantably, of course, set down to convulsions. As to predisposition, nervous heredity, etc., statistics were quoted to show that in over one-half of the cases in which patients reached adult life after having had convulsions in childhood they suffered from some variety of neuroses. These were not due so much to the malnutrition of the nervous system during infancy or to damage during the convulsive stage as to congenital faulty development. It is particularly the children of nervous, gouty, rheumatic, or diabetic parents that are liable to fits, and it is in patients in whom such a family diathesis is known to exist that any extreme of reflex irritation must be repressed or it will result in a nervous explosion.

As to treatment the discussion did not bring out anything striking, except, perhaps, by negation of the necessity for active measures. The referents said:

> All that is necessary during an actual attack of convulsions in most cases is to loosen the clothing about the neck, chest, and abdomen, and lay the child on its back with the head slightly raised until it recovers from the fit and the subsequent drowsiness. The placing of the child in a hot bath, as is such a common practice, probably does no harm, and if the child be in feeble health it may be advantageous to use a mustard bath, which has decided stimulating properties.

Very few American physicians would be content to be as inactive as our English friends suggest with anxious parents and relatives about. For the very severe convulsions or prolonged unconsciousness after a fit inhalations of chloroform even to deep narcosis were suggested. Small doses of the bromids were recommended for some days after the attack. The recurrence of an attack suggested the continuance of the bromids for weeks at least,

any harm that may be supposed to attend their use being more than counterbalanced by their benefit if they prevented the return of the convulsions.

METHYLENE BLUE AS A SEDATIVE IN INSANITY.

THE history of the use of methylene blue in general therapeutics is similar in many respects to that of other aniline compounds. Early reports, backed by commercial interests, were indicative of its value as a general panacea for many of the ills of the flesh, but of recent years it has found an established though restricted field in a limited number of affections. Its value in malaria admits of little doubt and in migraine and other nervous affections evidence is slowly accumulating that will give it a recognized position among the hypnotics.

Recent studies by P. Bodoni of the University of Genoa (*Klinisch-therapeutische Wochenschrift*, No. 21, 1899, p. 666) seem to show its wide applicability as a sedative in excited mental states. He reports some fourteen cases in which the remedy was tried; these included such conditions as simple acute mania, mania with furor, periodic mania, chronic mania, and the mania of chronic alcoholism, periodic melancholia, paranoia with delirium, hystero-epilepsy, and puerperal mania. In all of these cases the remedy was administered by hypodermic injection into the gluteal muscles, in amounts varying from one to one and one-half grains. Its sedative action became manifest within from three to six hours and usually persisted a day or, in some of the cases, even for three to four days. The quieting action was not attended by any narcotic effect and there were no unpleasant after symptoms observed.

The cause for its action is not definitely understood. By analogy, bearing in mind the use of this substance in technical microscopy by reason of its affinity for nerve tissue (methods of Ehrlich, Nissl, etc.), it would appear that it has a specific action on these tissues during life. This, however, has been denied by some observers who are inclined to class the drug with the blood poisons, acetanilid, etc., and thus explain its pharmacological action. The author believes that it should take its place with others of the hypnotics, such as chloral, amylenhydrate, trional, and even hyoscyamus.

LEGAL CONTROL AND TREATMENT OF INEBRIATES.

THE Legislature of the Australian Province of New South Wales has passed a law the practical workings of which will be followed with great attention by all who are interested in the various questions involved in the management of inebriety. According to the provisions of this law habitual drunkards are made amenable to State control and may be legally committed for treatment to certain institutions for definite periods of time. For the purposes of the law "Inebriate" means a person who habitually uses alcoholic liquors or intoxicating or narcotic drugs to excess: "Institution" means a place licensed under this Act or established by the Government for the reception, control, and treatment of inebriates.

The commitment is executed by a magistrate only after application in due form and after the submission of a physician's certificate, together with corroborative evidence by some other person or persons, that the person named is an inebriate and after the appearance before the judicial authority of the individual claimed to be the inebriate. It is within the discretion of the committing authority to send the prisoner for twenty-eight days to some private or public hospital or to his own or a friend's house there to be under control and treatment, or to commit him to a licensed institution for a period not more than twelve months. The law contains besides some very practical provisions to prevent its being abused or employed for purposes other than that intended—the good of the inebriate.

The Australian legislators seem to have devised a valuable measure for the solution of the trying problems associated with inebriety. Their treatment of the whole question of the habitual abuse of alcohol and drugs as a pathological condition that practically makes its victim irresponsible and therefore amenable to State control and discipline is thoroughly in accordance with modern medical views in the matter. Too much regard has previously been paid to the liberty of the individual. We congratulate our Australasian brethren of the medical profession, (for it is to their labors the law is due) on the success of their efforts to have the legal status of inebriety placed on a common-sense basis. We shall watch with interest the workings of the law

and hope to hear of further legislation along the same line among other English-speaking peoples.

THE STANDARDIZATION OF DRUGS.

An important work has been appointed to be done in Washington next May when the Revision Committee representing the American Medical Association, the American Pharmaceutical Association, and other bodies interested in therapeutics will meet for the purpose of conducting the customary decennial revision of the American pharmacopœia. Questions of unusual importance will come up for consideration and decision, and there is ground for no little satisfaction in the fact that the delegates appointed to represent the American Medical Association—Dr. Hobart A. Hare and Dr. George M. Gould of Philadelphia, Dr. F. E. Stewart and Dr. R. G. Eccles of New York, and Dr. Warren B. Hill of Milwaukee, Wis.—are men who, besides being well qualified to adjudicate on the points at issue, possess in a peculiar degree the confidence of the entire medical profession, and also of those engaged in the manufacture and sale of drugs. If the other constituent bodies are anything like as well represented, the Revision Committee will be one to which it will be possible to look with confidence for such a discharge of its duties as will make the meeting of 1900 an epoch-making stage in the history of the standardization of drugs.

Hitherto the practice has been to fix a standard of strength only for such drugs as are amenable to chemical assay. This includes, of course, such drugs as nux vomica, opium, and cinchona, regarding which standards were formally adopted at the revision conducted in 1890, and also ipecac and belladonna which the British pharmaceutical authorities have since added to the pharmacopœia recognized in the British Isles. The American revisers will no doubt include the latter drugs in the new pharmacopœia of this country, and it is highly probable that they will likewise admit and fix standards for the Calabar bean, gelsemium, hyoscyamus, podophyllum, colchicum, conium, stramonium, and veratrum, all of which lend themselves to chemical analysis.

The question is whether the work of the committee should stop here. Why, it is asked, should no standards be fixed for such drugs as ergot, digitalis, strophanthus, aconite, and cannabis indica? They are all drugs which are in universal use, and their quantitative standard is surely of as much consequence both to the physician who prescribes the remedy and to the patient who takes it as that of any other medicine. "It matters little," as one authority observes, "how much crude ergot goes to the fluid pound of the extract if the fluid fails to produce a characteristic physiologic action." What then is the objection to standardizing these drugs as well as others? Only this, that the drugs in question are not amenable to chemical assay, or at all events cannot in the present state of chemical knowledge be assayed chemically with a sufficient degree of accuracy to justify the fixing of a standard, measured quantitatively. But is this any reason why no attempt should be made to fix a standard by other means? Scientific inquirers conducting private investigations are not content to rest there, and neither are the higher class of manufacturing chemists. Acknowledging and making use of the chemical test whenever it can be applied with satisfactory results, they have recourse to physiologic tests, which as regards the question of potency are for all practical purposes equally reliable. At present, as has been pointed out, a practitioner who writes a prescription, say for digitalis, in a dozen different parts of the same town will find in some instances that he obtains a drug which exhibits a satisfactory physiologic action, and in others no satisfactory action whatever. This is submitting the drug to a physiologic test when it is too late. If, instead of leaving the patient to be experimented on, similar tests had previously been made with the article on some of the lower animals, the potency of the drug would have been known, and the doctor would be aware of the exact strength as well as the nature of the remedy he was prescribing. That the present condition of matters in this respect is recognized by the profession as eminently unsatisfactory was shown by the discussion which took place at the recent meeting of the American Medical Association at Columbus, Ohio, and it is hoped that the Revision Committee will deal with the subject in a sufficiently bold manner to provide an adequate remedy. To this end, however, it is necessary that it should be fortified by expressions of opinion both

from medical men and the manufacturers of drugs, it being to the interest of none, so far as we can see, except traders in inferior classes of drugs, to oppose the standardization of as many as possible of the drugs that are used in the practice of therapeutics.

ECHOES AND NEWS.

The Health of the Prince of Wales.—The Prince, during his recent visit to Marienbad was very democratic. While sitting on a park bench, a Polish Jew, not knowing his identity, began to question him about what he paid his doctors, etc. Finally he digged His Royal Highness in the ribs and told him he looked too healthy to need the water cure.

Cuban Yellow-Fever Statistics for August.—According to the official returns for yellow fever in Cuba up to the end of August, there were, all told, 55 cases and 20 deaths during the month. The cases were distributed among natives and Americans as follows: Cubans, 39 cases, 9 deaths; Americans, 16 cases, 11 deaths. It is especially at this season of the year that fatal cases develop among the unacclimated.

Arizona's Petrified Forest.—Dr. Lester F. Ward, one of the two experts on fossils with the United States Geological Survey, has gone to Arizona to secure for the Commissioner-general of the Land Office an opinion on the advisability of setting aside the famous petrified forest in that State as a National Park. Dr. Ward is an honorary curator of the National Museum, and is connected with the Smithsonian Institute.

The Lane Medical Lectures.—Sir Michael Foster, K.C.B., the distinguished English physiologist and author, will deliver the Lane Medical Lectures for 1900 in San Francisco. The lecturers in preceding years have been Mr. Christopher Heath of London, the well-known surgeon; Professor Clifford Allbutt, whose system of medicine has been so favorably commended in recent years, and our own Dr. Nicholas Senn of Chicago.

Mosquito Plague in London.—A mosquito plague of unusual dimensions has attacked the northeast of London. Bandaged heads, bootless feet, and swollen hands are conspicuous everywhere. It seems that about three weeks before the appearance of this plague Mare street was repaved with jarrah wood; and it is believed that the eggs must have come from Australia with the wood, and that Mare street has been converted, with the aid of the tropical sun, into a mosquito incubator.

Autobiography of Orfila.—It is announced by his heirs that Dr. Orfila, who was Professor in the Paris Faculty of Medicine and Dean of the Medical School from 1830 to 1848, left behind him an autobiography. Orfila was, as will be remembered, a distinguished medico-legal expert and was concerned in most of the great cases involving expert evidence during the interesting years from 1845 to 1848. Since the autobiography must also contain a picture of medical life in Paris for the first half of the century, it is hoped that it will soon be given to the public.

Obituary. — Sir Edward Frankland, the well-known chemical expert on water-supplies, who has been prominently connected with London's water-supply for nearly forty years, died recently in his seventy-fifth year while on a vacation in Norway. He was the father of the well-known bacteriologist and expert in the bacteriology of water, Mr. Percy Frankland. Sir Edward was known for his discoveries of the compounds of zinc with methyl and ethyl, and for the theoretic considerations they suggested. For this he was elected Fellow of the Royal Society, and was for years its Foreign Secretary.

Hospitals in the Philippines. — In view of the increased army now being sent to the Philippines, Surgeon-general Sternberg has issued orders for an increase of the Medical Department and hospital accommodations at Manila. As six months is required for building a large wooden hospital, it will be necessary to depend either upon tent hospitals or upon buildings already constructed which may be obtained for the purpose, 500 hospital tents have been ordered. Two hundred and fifty members of the Hospital Corps will be sent on the "Missouri," and twenty female nurses on the "Relief." Four experienced Surgeons of Volunteers, with the rank of Major, are now under orders for Manila in addition to the commissioned medical officers belonging to the new Volunteer regiments.

England's Fear of the Plague.—Sir Joseph Ewart, president of the medical section of the Sanitary Congress which met at Southampton, England, on August 30th, predicted that the near advent of the plague would find out England's weak places. Professor Simpson urged the Government to begin precautions at once against invasion and to send a small commission of physicians and bacteriologists to Portugal to study the diseases on the spot. Another proposal was that the plague commission recently engaged in India should now crown its work by a study of the same disease under European conditions. Other English expert opinion is that as these plagues are spread by contaminated drinking-water or body parasites England's best precaution is not elaborate quarantine, but persistence in personal and municipal cleanliness.

Alcohol and Life Insurance. — According to the *British Medical Journal* the mortality statistics of the Abstainers and General Insurance Co. of England make a very favorable showing for total-abstainers. The tables for the first fourteen years of the company's existence show that but forty-eight deaths occurred among total-abstainers for every 100 that might have been expected to occur according to the ordinary actuary statistics of deaths and the expectation of life in the general population. Abstainers are now claiming the right to lesser premium-rates than are accorded even to the moderate drinkers

of alcohol, for their death-rate seems to be notably less. It deserves mention, however, that this lessened mortality does not occur among abstainers who are reformed drunkards. Former indulgence in alcohol leaves its mark on their system and they do not enjoy the comparative immunity from disease accorded to life-long abstainers.

A Pneumatic Sole.—A recent air-containing appliance for the shoe is meant to be used in walking and bicycle shoes and the soles of boots in horseback-riding and the like. Experiments with rubber heels have shown that much irritation of the nervous system, especially in neurasthenic subjects may be prevented by avoiding the successive shocks of hard-heeled shoes. Tender feet are frequently a cause of insufficient exercise, so that this subject of improved footwear is of special interest to physicians. The invention was made by an Italian, Signor Fabro of Udine on the Austro-Italian frontier. It consists of a rubber tube bent in the shape of a staple, or letter U. This is placed between the inner and outer sole and extends from the heel to a little past the center of the foot, where the tube is cut so as to form a bevel. The tube acts as a spring, and air is supplied to it at the back of the heel and at the lower ends of the tube. The back of the tube is also slit to allow a free circulation of air. It has been found that such a shoe is very valuable for use on long walking tours.

The Yellow-Fever Situation.—As we go to press the excitement over the development of cases of yellow fever at Key West and New Orleans is subsiding. The type of the disease thus far in Key West has been very mild, the mortality being less than 10 per cent. Unacclimated persons who have not been exposed have been encouraged to leave for the North. The names of those who left the city, and who might prove sources of infection later because of exposure at Key West, have been secured and they will be kept under observation. The Marine Hospital Service and the Health authorities of Florida are acting in very harmonious concert and both promise that the epidemic will be kept well in hand. At New Orleans no new cases were developing at the beginning of the week and it seems as though the epidemic is over for the present at least. All alarm in the city itself is past and there has been very little disturbance of commerce. The neighboring Southern States, as a rule, did not even deem it necessary to quarantine against goods coming from New Orleans.

The Plague Situation in Europe.—The case of plague reported to have been discovered at a London hospital last week has proved on investigation to be a figment of the imagination of an enterprising reporter. At Oporto three new cases were reported last week, but no deaths, and this week three cases with one death. The sanitary cordon between Spain and Portugal is about completed. The Spanish Government interdicted all intercourse between the two countries, until the five quarantine stations on the frontier were established. Three of these were in working order last week and the others are supposed to be ready by this time. The temper of the Portuguese people has changed very materially with regard to the disease. At first they scoffed at the idea of the existence of plague, then they refused to believe the assurances of sanitary experts and were riotous because of the enforcement of quarantine regulations. But the realization of the seriousness of the situation is gradually becoming widespread and the enforcement of the precautions necessary is accepted more willingly.

Diseases Less Dangerous to Life.—Dr. Samuel W. Abbott, Secretary of the Massachusetts Board of Health, has presented statistics to show that diseases are growing less dangerous to human life. The hygienic condition of the people in that State was better last year than at any previous time for a half a century. There were fewer deaths by 1263 from infectious diseases than during the previous year, though the population in the meantime increased from about 2,610,000 to about 2,665,000. The number of deaths from diphtheria decreased one-half, scarlet fever more than one-half, the deaths from consumption were about five per cent. fewer, and there were only about one-half as many deaths from measles as in the former year. The death-rate was reduced to eighteen per thousand, whereas it has been at nineteen for half a century. There was a slight increase in the number of deaths from certain diseases, including typhoid fewer, pertussis, and cholera infantum. The decrease in the death-rate is attributed to various causes, as improved sanitation, stricter quarantine regulations, and a better knowledge of disease.

Assistant Physician to the Government Hospital for the Insane.—The United States Civil Service Commission announces that on October 4, 1899, examination will be held at any city in the United States where the Commission has a board of examiners, for the position of assistant-physician, junior grade. The examination will be in letter writing, anatomy and physiology, chemistry, materia medica, and therapeutics, general and special pathology, surgery, bacteriology and hygiene, and obstetrics and gynecology. The minimum-age limitation for entrance to this examination is twenty years; the maximum none. The examination is open to both males and females. From the eligibles resulting from this examination certification will be made to fill two positions in the government hospital for the insane, one from the male register at $900 per annum and one from the female register at $600 per annum. Persons desiring to compete should at once apply to the United States Civil Service Commission, Washington, D. C., for application forms 304 and 375, which should be properly executed and promptly filed with the Commission.

Consumption of Quinin in the United States.—According to the official statistics of the Treasury Department over a billion and a half grains of quinin were imported by the United States during the year ending July 1st. This is equivalent to an annual consumption of something more than 20 grains by each inhabitant. The change that has occurred in the quinin industry in recent years is

well explained by the *Scientific American* in a recent issue. "As is well known, quinin, Peruvian bark, and calisaya bark are the products of the cinchona tree, which is a native of Western South America, more particularly of Peru and Ecuador. Now, however, but a small part of the supply comes from that region. At present two-thirds of the quinin consumed is produced in Java from cultivated trees. For many years the Dutch Government was urged to undertake the cultivation of this plant from Peru. Finally this was accomplished and a large number of specimens of the different varieties were obtained by botanists, who took them to Java in 1852. The English Government also started cinchona plantations in India which now produce large quantities of quinin."

MEDICAL MATTERS IN NEW YORK.

PORTUGUESE SHIP HELD—HOSPITAL ATTENDANTS INDICTED — VACCINATION COMPULSORY —ILLNESS OF DR. VON GRIMM— EMANUEL HOSPITAL PLANS— OBITUARY — BROOKLYN'S CHARITY BUDGET— FRAUDULENT LIFE RISKS—RABIES.

THE Portuguese steamer "Oevenum" arrived at this port on September 1st from Oporto, Lisbon, and St. Michaels. All on board were well. However, the "Oevenum" has been detained at quarantine for thorough disinfection.

Daniel O'Connor, Thomas Sexton, and Patrick J. Bryan, three hospital attendants in the Manhattan State Hospital, were charged on August 28th, with having caused the death of James McGuire, the paretic, who died on August 5th. It was claimed that the three attendants, in attempting to subdue McGuire during one of his violent spasms, threw him to the floor and beat him with a club. The charge of manslaughter was sustained.

President Murphy of the Board of Health is not satisfied with the manner in which the Brooklyn, Queens, and Richmond Borough School Boards enforce section 200 of the New York health laws relating to the vaccination of school children. They are requried to be properly vaccinated before being admitted to the schools. President Murphy threatens to prevent the opening of the schools until this rule is complied with.

Seven weeks ago Dr. Andrew von Grimm, an attending physician to the Babies' Ward at the Post-Graduate Hospital was bitten by a little patient while operating. His thumb was in the child's mouth, the gag slipped and its teeth inflicted what proved to be an infected wound. On August 31st Dr. John F. Erdmann operated upon the hand of Dr. von Grimm for the third time, amputating almost the whole of the affected thumb, and excising the epitrochlear glands. Recovery is now expected.

If the State Board of Charities shall approve the plans of incorporation of the Emanuel Hospital and Dispensary of New York, Dr. Maurice J. Burstein will select a site and erect a building thereon which he will present to the institution. Dr. Burstein's associates will be Drs. Ephraim K. Browd, Henry Levien, Maurice Caspe, Harris B. Addler, Abraham Hymanson, Israel Szlachecki, Max Wolper, Bernard Scheinkman, Joseph Barsky, Morris Cisin, Max Danidoff, George I. Miller, Max Landesmann and Max Moskievitz. These physicians will serve gratuitously and will act as the hospital staff. The establishment will be used principally as a lying-in asylum. But diseases will also be treated. The charges for treatment and board will be nominal. Those not able to pay anything will be treated without charge both in hospital and dispensary.

Dr. James Fitzgerald Feeley, Chief-Surgeon and President of the Board of Managers of St. Catherine's Hospital, Brooklyn, died suddenly on August 30th. He was born in London, England, in 1844, and came to Brooklyn when a child with his parents. He graduated from the New York University Medical College in 1865, and from 1868 to 1873 he was demonstator of anatomy in this institution. He was one of the founders of the Brooklyn Surgical Society, and was a member of the Kings County Medical Society, the New York Medical Association, the New York Physicians' Mutual Aid Association, etc., etc.

Dr. William H. Caemmerer died in Brooklyn on August 30th. He was born in the East Indies seventy-eight years ago. For eighteen years he was examining physician at Castle Garden, holding that position during the Civil War.

Dr. Cornelius H. Schapps, ten years ago a prominent physician of Brooklyn, died September 1st. He was eighty-two years old. He served for many years on the Brooklyn Board of Education, and was an energetic advovate of compulsory education.

Commissioner of Charities, Adolph Simis, Jr., for the Borough of Brooklyn and Queens, has completed his budget for the year 1900. An appropriation of $703,298 is called for. This is an increase of $371,004 over that of 1899. This increase is chiefly for alterations, repairs, and additions to the hospitals and almshouse plants in these boroughs.

Some physicians in this city are said to thrive on the practice of assisting rejected applicants for life insurance to get into such physical condition as will unable them to pass the usual examination and victimize the companies. Concerning this work the representative of a large company states that there are certain members of the medical fraternity of the variety that has lost all hope of attaining success by legitimate means who will for a monetary consideration, examine an applicant for insurance who is doubtful about his chances of success, find out his physical weakness, and put him through a course of treatment which will bolster up his frame and enable him to pass as a healthy man for the brief space of time in which the examination is made. On the other hand, there are few agents who will not exhibit the profoundest resentment against the physician who rejects the subject whom the agent may have been working for months to capture.

Three children were taken to the New York Pasteur Institute yesterday by their father, Adam Beckenbach, a hatter, living in West Orange, N. J. All three had been bitten on Sunday, August 27th, by a pet dog, that after inflicting severe wounds upon each of the children disappeared, and is still at large.

MEDICAL MATTERS IN CHICAGO.

[From Our Special Correspondent.]

POLLUTION OF WATER-SUPPLY——ANOTHER DEATH AT ZION HOME—EFFECT OF RAINFALL UPON CERTAIN KINDS OF DISEASES—INVESTIGATIONS REGARDING CHILD-STUDY IN CHICAGO PUBLIC SCHOOLS—INVESTIGATIONS AS TO THE BACILLUS ENTERIDITIS SPOROGENES (KLEIN).

CHICAGO, September 5, 1899.

ON August 21st two questions of the utmost importance to the general public and to the business and commercial interests of Chicago were considered in conference. Consideration of the first is expected to result in revision of the municipal code relating to the care and control of the streets and alleys, and to the general sanitary and police regulations of the city. The second problem arises from a recent order of the city against the pollution of the water-supply by dumping into the lake, and threatens most serious complications which may greatly delay the completion of the drainage-canal if they do not stop further improvement of the Chicago River. Among the evils discussed at the conference which are not adequately dealt with by the existing code are: Littering of the streets by private property owners; dumping refuse in the streets and alleys; leaving barn refuse on public or private property; street obstruction by standing wagons and cab-stands, or other similar violations of a dead-letter law; rag-picking or the handling of garbage or other refuse within the city limits except for the purpose of removal; location of rag-picking depots within the city; accumulation of refuse on private property.

Among the provisions needed are: Police regulation of hauling and teaming so as to prevent littering streets; garbage and refuse receptacles to be placed on private property, with regulations for cleaning them; rules and regulations prohibiting contractors and builders from unduly obstructing streets; special regulations for cleaning and sanitary care of South Water street, markets, etc.; law against dumping of filth and other material in catch-basins and in sewers in the street; regulation against dumping on private property; destruction of dangerous or objectionable weeds or thistles on private and public property.

Many proposed changes in the laws so as to secure their proper enforcement and the conviction of offenders were discussed. Regulations prohibiting objectionable noises at night received attention. Commissioner Reynolds called attention to the continuous blowing of signal whistles on the lake and along the railroads, which, he declared, is contrary to law and makes sleep impossible in many portions of the city. The advisability of putting all sanitary inspectors in uniform was also considered. Before adjournment it was agreed that each department should formulate its recommendations, to be submitted at the next meeting of the commission.

According to our local newspapers, people are constantly dying at Zion Home, Dowie's faith healing institution. Recently a child, nine years of age, unable to exercise any discretion of her own, was brought to Zion by her parents in response, it is said, to the solicitations of Dowie, with diphtheria, from which she died. In commenting on this case a local paper editorially remarks: "If human life is sacred, and if it is of any public concern whatever that it be safeguarded and preserved as far as practicable, then the public is concerned with the rites and practices of 'Zion' in Chicago. Unless the people are absolutely indifferent to the deaths of individuals through charlatanry and fraud, they have a vital interest in depriving Dowie's 'doctors' of some of their power to do harm."

It is a difficult matter to say that an adult person shall not, if he so desires, dispense with medical attendance and depend on faith to cure his disease, but it ought not to be a hard matter for the officers of the law to discourage the impostor from playing on his victim's superstition and persuading him to jeopardize his life. But when it comes to innocent children, incapable of deciding for themselves, and whose parents are under the duty of providing them with doctors and medicine in case of need, it ought not to be hard to apply an efficient legal remedy. The attorney for the State Board of Health says the board contemplates asking the next Legislature for a modification of the medical practice law that will make it impossible for Doweism to kill young children by neglect. The Legislature ought to make such a law, and make it strong.

The Health Department of Chicago has issued a bulletin setting forth some curious and interesting facts about the effect of rainfall upon certain kinds of disease. The first four months of 1898 were remarkably dry—especially April. The total precipitation for these months was only 4.5 inches, as against 9.72 in normal years. Drs. Reynolds and Reilly have discovered that this fact had a marked effect in decreasing all "water-borne" diseases, such as typhoid fever, while, on the other hand, it greatly increased the "air-borne" diseases, such as scarlet fever, pneumonia, and diphtheria. In the seventeen dry weeks the deaths from water-borne diseases averaged 25.7 per week. In the ensuing nine weeks, which were normally wet, the deaths from these diseases averaged 44.8 per week—an increase of 74 per cent. On the other hand, the air-borne diseases during the dry period caused 191 deaths per week, while during the ensuing nine weeks these deaths fell to a weekly average of 105—a decrease of 45 per cent. The same results are shown by a comparison of the 1899 dry season with the first six months of 1898, which constitued a wet season. During the first six months of the present year there were 317 deaths from scarlet fever, an increase of 750 per cent. over the previous year. But during the 1898 wet season the deaths from typhoid were greater than in 1899 by 82 per cent. The conclusion is that, in Chicago at least, "dry seasons increase the prevalence and fatality of the air-borne diseases and reduce the prevalence and fatality of the water-borne diseases, and vice versa." The pollution of the lake by the flushing of the sewers probably accounts for the effect of rain on the typhoid type of diseases. The completion of the drainage canal will bring an improvement in that regard. As for the "air-borne" diseases, they will have to be combated by keeping the streets and

alleys cleaner, and by improved sanitary precautions in tenements and residences.

Scientific pedagogy and child-study in Chicago's public schools recently received fresh encouragement and impetus when a special committee having charge of the work asked for $2000 to carry it on to the end of the present year. Assurance was received that the School Board would grant the request. Dr. W. S. Christopher, Chairman of the Special Committee, presented a long report of extreme interest in its revelations. This report covered experiments made with children of the Alcott, Burr, Hoyne, and an ungraded school as to their weight, height, endurance power, air, or lung capacity, grip (right and left hand), sight, and hearing capacities. In all about 1400 school children were examined during the last three months of the recent school year. Professor F. W. Smedley of the University of Chicago, and Professor C. Victor Campbell of the public schools conducted the experiments.

After a certain age is reached should the girls and boys of the public schools be separated in their school work and different tasks be assigned to each? This was one of the important questions propounded by Dr. Christopher in his report. The ergograph (the child fatigue-testing machine) showed in experiments with 1400 school children that the girl of sixteen and seventeen had far less endurance power than the boy of the same age, while from six to nine years of age the endurance power of the girl was the same as that of the boy. After nine the girl's endurance decreased, the boy's increased. Naturally, Dr. Christopher asked, should the same burden then be put upon the girl in school after nine years of age as upon the boy after the same period is passed?

In the ergographic test the child was required to lift with its middle finger seven per cent. of its actual weight for ninety seconds. The ergograph registered by tracings the endurance power of the child. Its use immediately revealed the neurotic child, the child of highly strung nerves and irregular capacity for work. Since the apparatus revealed this, it followed that such knowledge given to the teacher or a parent would at once suggest means of aiding the child, strengthening it where weakness existed. The ergograph revealed that endurance comes to the growing child quicker than age, but Dr. Christopher held that its most wonderful and valuable detection was the point which made it plain to him that after a certain age girls should not study with boys, nor carry in the school work the same burdens put upon the opposite sex.

In the test of the lung capacity of the children it was revealed that with advancing age the child's capacity increases, but after nine years the lung capacity of the boy is greater than that of the girl until at sixteen or seventeen there is a wide difference between their strength in this respect. The measurements for height revealed that there is an intimate relation between intellectual capacity and height. There are exceptions to the rule, it was admitted, but as a rule a child with normal height at a given age was of stronger intellectual capacity than a child of less height at the same age. The same rule was found to apply to weight. A child of healthful intellectual capacity was found to be of normal weight for its age. This led Dr. Christopher to suggest that the test for the first admission of children to school should be upon their weight, and not their age, as at present. As to the grading of children in the schools, it might well be done upon physical characteristics as well as intellectual ones. He added: "If our observations could have covered more children, say 5000 or 10,000, we would be in position to formulate a positive rule upon what we have discovered and at the same time we would be able to study and account for exceptions to the rule. It is a duty of the Board of Education to do no physical damage to the children while aiding their intellect. We found that the weights of the children in the first grade varied but little, but at the seventh and eighth grades the variation was great."

Investigation was made of how the strength of the child varied during school hours—at nine quite fair, at ten strong, at eleven decreasing, and at noon gone; a slight revival at one, fairly good at two, and a second decline at three. Closer study along this line would reveal a means of knowing just what the strength capacity of each child was during the hours of work.

Tests were made of the dull, stupid, and unmanageable children of an ungraded school. In every particular but lung capacity they fell below the well-fed and disciplined children of the Alcott School. This led Dr. Christopher to comment that further investigation would reveal how to care for the unmanageable children of the ungraded schools, how to correct them and develop their best parts. He asked that the board authorize the continuance of the work for the remainder of the school year, create a special department for it, choose a supervisor and give him at least two assistants. The cost for carrying on the work the remainder of the year would be $2000. For a full school year such a department, he thought, would not cost over $5000 or $6000.

Dr. Adolph Gehrmann, the Director of the Municipal Laboratory, Chicago Department of Health, has been conducting a series of investigations in regard to the bacillus enteriditis sporogenes (Klein), with a view to determine the presence of this bacterium in Chicago's sewage and of studying its relations to polluted drinking-water. His observations have so far been confined to Chicago River water and sewage taken direct from the sewers, and to the samples of city water-supply collected in making the daily analyses for the Department of Health. From these experiments it appears certain that bacteria of the species described by Klein, or very similar to them are practically always present in the sewage of this city. He is not, however, ready to admit that all of the animals inoculated were killed by the bacillus enteriditis sporogenes, but it is at least clear that the group of bacteria to which this species belongs is present. Klein suggests the use of the Pasteur filter as an aid to isolating the spores from water. But in practical water examination Dr. Gehrmann has found that the extra work and care involved in arranging for filtration in this manner are not repaid by the results.

CORRESPONDENCE.

AN ANOMALOUS CONTINUED FEVER.

To the Editor of the MEDICAL NEWS.

DEAR SIR:—During the past year or two, especially in North Carolina, much has been said in regard to the existence of a type of continued fever different from malarial and typhoid fevers. The subject was before the last meeting of the State Medical Society, and the general opinion was that we find but two forms of fever, *viz.*, malarial and typhoid fevers. This opinion is hard for us, who have met many cases so different from the usual forms of these fevers, and with so very few characteristic cases of malarial or typhoid fever, to believe.

For the past five years in the town of High Point, N. C., with a population of 5000, I have met many cases in which, owing to the lack of the usual symptoms of even mild typhoid fever seen in other localities, I have not been satisfied to accept this diagnosis; and owing to my inability to find any form of the malarial plasmodium, malarial fever was not an acceptable diagnosis; especially when the liberal use of quinin had failed to impress the disease. I have made Widal's test in many cases and have never been able to obtain the characteristic clumping of the bacillus, nor has Dr. Messick of Baltimore, who has kindly made a number of examinations of blood from these patients, succeeded in finding any form of malarial germ. The usual symptoms in these cases are malaise, loss of appetite, tongue slightly coated, temperature from 100° to 103° F. Most patients when first seen have a tendency to constipation, but if allowed to eat solid food, diarrhea develops. The patients generally are free from fever in from three to four weeks, some in two. A very peculiar feature met with is that a large number of cases continue as long as twelve weeks before fever is gone; and many of these patients have gone through three attacks in three successive years. Some of them have refused to go to bed after the first attack, and have apparently progressed as well as, or even better than, those who did. I have seen these patients at all times during the attack, and at no time found them without fever. They have been carefully examined for diseases of the lungs, etc., but with negative results. No age seems to be exempt. I have seen it in children and aged alike. One lady seventy-six years old went through an attack of twelve-weeks' duration. Treatment has no effect on the course of the disease. I have seen but one death among several hundred cases, and in this instance no post-mortem could be obtained.

JAS. S. TURNER.

HIGH POINT, S. C., August 28, 1899.

For Vaginitis.—

℞ Pulv. aluminis, Zinci sulphatis, Sodii biboratis, Acidi carbolici aa . . . . . ℥i
Aquæ . . . . . ℥vi.

M. Sig. A tablespoonful to a quart of lukewarm water as a vaginal injection twice daily.

TRANSACTIONS OF FOREIGN SOCIETIES.

French.

GASTRIC ORIGIN OF DERMATOSES—AORTITIS OCCURRING IN MALARIA—TUMOR DUE TO COCCIDIA—A NEW CLASS OF MERCURIAL ANTISEPTICS CALLED EGOLS—IMMUNITY IN THE BLOOD OF THE FETUS TRANSMITTED FROM THAT OF THE MOTHER—HYSTERECTOMY IN PUERPERAL INFECTION—INCREASE OF TYPHOID FEVER IN PARIS—INTRA-ABDOMINAL TENSION IN ASCITES.

AT the Academy of Medicine, Paris, July 18th, ROBIN spoke of the gastric origin of a certain number of dermatoses. He made a study of 422 dyspeptics, of whom 129 presented some skin lesion (acne, eczema, lichen, pruritus, urticaria, hyperidrosis, furunculosis, seborrhea, alopecia, recurrent herpes, and squamous dermatitis). Thirty patients who suffered from simple pruritus or eczema, part of whom did not present any symptoms of stomach trouble, were also carefully examined. There was found in all, however, a certain amount of lactic- or butyric-acid fermentation. The latter acid was found in the gastric contents of 28 of the 30 patients, whereas it was found only 31 times in the gastric contents of 100 hyperesthenics chosen at random. These examinations, therefore, show that there is a constant relation between pruritus and fermentative dyspepsia. The acids seem to act directly upon the skin already modified by improper nutrition. Possibly they are eliminated through the sweat-glands. The dyspepsia should be attacked by appropriate measures and the nutritive disorders should, if possible, be removed. The fluorids should be given for lactic-acid fermentation while for the butyric the double iodid of potassium and cinchonidia, sulphur, iodid of sulphur, etc. Locally, the various well-known remedies may be used with success. Chlorid of sodium and calcium carbonate in the powdered form are helpful. The powder should be dusted on, and then an application should be made of a balsam containing aloes.

On July 25th POTAIN reported the case of a man, aged twenty-five years, whom he had received into the hospital suffering from intermittent attacks of fever which yielded to treatment by quinin. He gave a history of malaria some years previous. There was a marked increase in the area occupied by the arch of the aorta and this symptom subsided with the disappearance of the malarial symptoms. It is possible to look upon this condition as the result of a paresis of infectious origin, but it is by no means an invariable accompaniment of malarial infection. Whether or not it was a true inflammation of the aorta deserving the name of aortitis, it seems probable that such a marked change in the arterial wall cannot take place without a certain modification of the tissues. It seems similar to those lighter degrees of aortitis which have been observed in the course of various infectious maladies.

CORNIL examined a tumor the size of an orange which had developed in a bursa under the right triceps following a blow. Some time afterward similar tumors appeared over the right and left great trochanters and then an other appeared near the left olecranon. They were situated either

in the serous bursæ, subcutaneous or deep, or in the cellular tissue under the muscles, but in no instance did they communicate with the neighboring joint-cavity. To the naked eye these tumors were made up of a great number of pockets of various sizes so that they resembled a sponge. Each of these pockets contained a yellowish-brown fluid, creamy or viscid, in which there were yellow grains of calcareous material. The general location of the tumors, together with the fact that the patient's sixteen-year-old brother presented one of the same nature, led to the inference that they were of parasitic origin. This hypothesis was supported by the demonstration in the tumor substance of numerous giant-cells, but no parasites could be found. Recently, however, Milian, who made an examination of a similar tumor removed from the sole of the foot of a girl aged eight years, found it to contain oviform, refractive, crystalline bodies. Some of these had capsules and stained deeply with hemotoxylin. These observations prove the existence in a man of a variety of tumors of the cellular subcutaneous tissue having peculiar characteristics and produced by coccidia.

At the Academy of Science July 10th, GAUTRELET described the manufacture and characteristics of a class of new antiseptics. They are prepared from the parasulphonal derivatives of the phenols by the action of nitric acid. He found that orthonitroparasulphonic acids under certain circumstances will absorb a quantity of mercury equal to a half atom per atom of the original phenol made use of in the reaction. There result some very stable compounds to which he gave the generic name egol. The egols occur in the form of a reddish-brown powder, soluble in water in all proportions, either hot or cold, but insoluble in concentrated alcohol. The watery solutions of the egols are without odor and have very little taste. They do not coagulate albumen, are not decomposed by organic matters nor are they caustic or irritable. They are not very poisonous. It requires at least two parts in the thousand of the body weight of an animal to produce death, when injected hypodermically. The egols are quickly eliminated from the system. They possess a considerable antiseptic power. In the proportion of four parts to one thousand they stop all bacterial action.

At the session of July 24th BECLERE, CHAMBON, MENARD, and COULOMB described experiments made by them to determine the transmission of immunity from smallpox, from the mother to the child. They found that women who were vaccinated during pregnancy and whose blood-serum was found to possess antivirulent properties with reference to smallpox transmitted this condition to the blood of the fetus. On the other hand, there was no such transmission from those mothers whose serum was not antivirulent whether they were vaccinated during or before pregnancy.

At the Surgical Society, July 26th, TUFFIER spoke of vaginal hysterectomy in acute puerperal infection, an operation which he has performed three times upon patients in whom the lesions of the disease were confined to the uterus. In each instance curetting and various other measures in ordinary use had failed and the patient was considered doomed. One of these women made a rapid recovery; the other two died. A search through medical literature shows that since the operation was first performed by Schultze in 1886 there have been thirty-three hysterectomies performed for infection. In twenty cases it was followed by death; in thirteen by recovery. Vaginal hysterectomy under such circumstances presents great difficulties. On account of the softness of the uterine walls, it is almost impossible for the operator to make out the exact limits of that organ.

At the Medical Society of the Hospitals, July 21st, NETTER spoke of the marked increase in the number of patients of typhoid fever at the Trousseau Hospital since the beginning of the year. As the patients were all children the infection most likely took place in their homes or their immediate vicinity. He expressed the opinion that the contamination of the drinking-water at its source was not likely. It was more probable that it became foul either in the reservoirs or in the pipes. It was also necessary in determining the source of infection to consider the increased amount of digging in the subsoil which had taken place.

At the Biological Society, July 15th, PITRES spoke of the intra-abdominal tension in ascites. This he usually found to be less than twenty millimeters of mercury. The initial pressure when the abdomen is tapped is not directly proportional to the quantity of liquid accumulated in the peritoneal cavity. The final pressure after evacuation of the ascitic fluid ordinarily remains positive. Sometimes it sinks to zero but it never falls below that point, probably on account of the elasticity of the abdominal walls and the compressibility of the gas contained in the intestines. The total value of tapping, that is to say, the difference between the pressure in the beginning and at the end of ascites, is never very great. It was found to range from three to nineteen millimeters of mercury, but it rarely surpassed fifteen millimeters.

SOCIETY PROCEEDINGS.

ROCKY MOUNTAIN INTERSTATE MEDICAL ASSOCIATION.

First Annual Meeting, Held at Salt Lake City, Utah, July 25, and 26, 1899.

AFTER the opening of the meeting by the President, DR. CHARLES PINCKNEY HOUGH, and an address of welcome by the HON. HEBER M. WELLS, Governor of Utah, DR. SALATHIEL EWING of Salt Lake City read a paper, entitled

THE MEDICO-LEGAL SUPERVISION OF PROSTITUTION.

He urged the dangers of syphilis and gonorrhea, and said that since prostitution cannot be eradicated it should be supervised so as to lessen the ravages of these diseases. The attitude of the police authorities toward the class of prostitutes was condemned. Funds obtained by the licensing of prostitutes could be rightly employed for the limitation of the diseases in question, by the support of reformatory institutions and hospitals. Weekly inspection

should be practised, and strict quarantine and hospital treatment of those diseased carried out. While he entertained the highest respect for the clergy, he thought that in regard to this matter, they had generally taken a wrong attitude.

TREATMENT OF CHOREA.

DR. S. D. HOPKINS of Denver read a paper with this title. He had obtained satisfactory results by the administration of antipyrin according to the method of Dr. J. T. Eskridge. The drug was given in increasing doses, beginning with 1 grain for each year of the child's age and increasing 1 grain each day. In the mildest cases the child was permitted to sit up a part of the day and the antipyrin was only given in the evening. In severe cases absolute rest in bed was required and the dose of antipyrin was given three times a day. As soon as the choreic movements ceased, or greatly diminished, the drug was stopped. Fowler's solution and iron were given until two or three weeks after the cure appeared to be complete. In giving such doses of antipyrin, 20 grains, three times a day to a child eight years old, for instance, certain precautions must be observed. The child must be kept in bed and carefully watched. If there is heart disease, or fever, antipyrin should not be given. The speaker had seen no bad results from its use, and in the nineteen cases upon which his paper was based had obtained rapid cures.

HYDATID MOLE.

DR. S. G. KAHN of Leadville reported a case of hydatidiform mole or cystic degeneration of the chorion from his own practice, with three other hitherto unpublished cases from the practice of others. He had sent letters of inquiry to 400 physicians, from whom he received 78 replies, reporting 12 cases in all. This illustrates the rarity of the disease, and the impossibility of obtaining any valuable statistics. The results of inquiries with regard to factors of causation had been negative.

HEMOPHILIA.

Two cases of this affection were reported by DR. A. A. KERR of Salt Lake City. One was in a boy ten years of age, who bled from an abrasion of the gum. His mother's brother had died of hemorrhage following an operation. The parents were healthy, as were two of their children. Two other children had been bleeders, dying from hemorrhages at the age of twelve days and six months, respectively. The second case was that of a baby ten months old, whose family history was negative.

The president's address, delivered at the opening of the afternoon session of the first day, emphasized the need for closer association among the physicians of the inter-mountain States. They have many themes of common interest, and are too far removed to attend the regular meetings of the American Medical Association when held at the East. They can meet each other once a year at some place in the inter-mountain region with great advantage. He advocated proper regulation of the practice of medicine, but thought that medical laws should be so modified as to permit a physician of established fitness to practise in any State without having to pass an examination which some of the examiners might have been able to pass only when they first graduated. If membership in the American Medical Association were not a sufficient guarantee of fitness to practise anywhere, that organization ought to be reorganized.

USE OF THE HEMATOKRIT.

DR. JUDSON DALAND of Philadelphia urged the clinical value of blood examinations with this instrument. He pointed out the great amount of time required to make a careful blood-count, the importance of duplicating it to obtain reliable data, and the great probability of serious inaccuracy. The hematokrit does not exactly replace the blood-count, but the ease with which the volumetric estimate of the corpuscles can be made gives it a greater clinical value. More time is required to keep the apparatus clean and in order, but with an assistant the volumetric estimate could be made in three minutes. A diluting fluid to preven. coagulation is not needed unless the tendency to coagulate is very great, but rapid manipulations are necessary to secure accurate results. The speaker revolves the tube 10,000 times per minute for two minutes. This gives 50 per cent. as the volume of corpuscles in normal blood. By multiplying by two the percentage of corpuscles, as compared with normal blood taken as 100 per cent., is obtained. For comparison with blood-counts the 100 per cent. so obtained may be taken as representing 5,000,000 corpuscles to the cubic millimeter.

FIBROID PHTHISIS INDUCED BY QUARTZ DUST.

DR. W. W. BETTS of Salt Lake City called attention to the terrible mortality in connection with lung trouble induced by the dust of the De La Mar mill, where certain gold-bearing ores are reduced to a fine powder and the air is filled with an impalpable dust. It was stated that all who had worked in these mills from seven to nine months, previous to January, 1898, are now dead. The total deaths up to March 1st, of the present year he believed to be 166. He reported 14 cases in tabular form, occurring in men from twenty to forty-three years of age, who previously were healthy. One was able to work 23 months and had lived 2 years afterward. Another had worked but 3 months and died 7 months later. The average time they were able to continue working was 13 months and the average time they lived after leaving the mill was 10 months. The trouble began with attacks of acute bronchitis with inflammation of all the exposed mucous membranes. Later there was loss of appetite and loss of weight, rapid respiration and general malaise. The pulse ranged from 90 to 120, and became weak and intermittent, and in the late stages the temperature rose to 102° or 104°F. Two autopsies showed great disease of the pericardium, the lung tissue was excessively firm with great increase of connective tissue, and air-cells partly obliterated. On chemical analysis the lung tissue was found to contain 2.8 per cent. of silica, and the bronchial glands 3.8 per cent. There is tellurium in the ore but no arsenic.

DR. P. E. JONES of Salt Lake City thought the disease

in question is the same as that which affects the employees in cutlery-works and grindstone quarries, and to which grain-shovelers are especially liable. So long as life is less valuable than gold will the sacrifice continue.

DR. F. CLIFT of St. George, Utah, said all the men who left St. George to work in that mill came back with this trouble. Three of them are still alive but on the way to follow their fellows. There is not the slightest doubt that all who now work in the mill are likewise doomed.

DR. MAYO, who had been surgeon for the De La Mar Company for four years, had carefully investigated the subject with the aid of the Company's records, and had found that only 34 had died who had been employed during that time. He believed a similar mortality would be discovered among the workers in other mills handling similar ores. When the disease is once contracted it probably is necessarily fatal. Since the attention of the company had been called to the matter extensive changes had been made in the mills. Fans, hoods, and ventilators have been put in and respirators supplied to the men with instructions about using them. Recently an inspector of the New York Life Insurance Company had reported that the workers in these mills are in no more danger than the workers in the flour-mills of Minneapolis.

REPEATED EXTRA-UTERINE PREGNANCIES.

DR. C. K. FLEMING of Denver reported two cases. The first patient, after marked evidence of rupture of the sac, had presented the symptoms of sepsis and was treated three weeks for typhoid fever before Dr. Fleming saw her. She promptly recovered after the evacuation of a pelvic abscess. After eighteen months of regular menstruation she had the same train of symptoms but refused operation and slowly recovered without it. The second patient was operated on shortly after the occurrence of symptoms of tubal rupture, and a pelvic hematocele found. One year later similar symptoms appeared, and at operation the right tube was found ruptured and containing a large blood-clot. This patient also recovered. There was no history pointing to previous disease in either case.

CARCINOMA OF THE UTERUS.

DR. W. W. GRANT of Denver pointed out that the universal increase in the mortality from cancer makes its causation and prevention of practical interest. The theory of a specific parasite seems on the whole to be gaining ground. Certain it is that cancer occurs chiefly in parts most exposed to both traumatism and infection. On early diagnosis rests the only chance of cure. He favored frequent examinations of women near the menopause, and microscopic examinations of suspicious lesions. In women who have borne children all lacerations of the cervix should be repaired at forty years of age.

TREATMENT OF ACUTE CONJUNCTIVITIS.

DR. EDWARD JACKSON of Denver said that acute conjunctivitis includes, in addition to the effects of eye-strain and local irritants, at least five specific infections; and that successful treatment depends on the careful discrimination between the different classes of cases. Eye-strain is always to be thought of and eliminated. In all forms of conjunctival infection, complete cleansing at sufficiently short intervals is of the greatest importance. Protargol is to be employed for purulent conjunctivitis, with a few applications of a strong solution of silver nitrate in bad cases. Mydriatics and cocain should not be prescribed for acute conjunctivitis, because they are more likely to do harm than good. To secure the greatest cleanliness of the conjunctiva and to limit the dangers of infection all forms of poultice, bandage and compress should be carefully avoided.

POINTS IN EYE-WORK.

DR. R. F. LEMOND spoke of the important relations between eye lesions and brain disease. He believes the pathological changes often found in the astigmatic eye are for the purpose of relieving the strain that would otherwise come upon the brain.

IMPROVED ARTIFICIAL EYES.

DR. G. MELVILLE BLACK of Denver, in a paper on "Ocular Prothesis," called attention to the recent suggestion of Snellen regarding different forms of artificial eyes. The shell heretofore generally used is designed to be worn over a shrunken eyeball, and not to fill up the orbit after an enucleation. There are also needed a concavoconvex form of artificial eye to be worn over a small stump and a double convex form to properly occupy the orbit after enucleation, Artificial eyes of the latter forms not being obtainable yet in this country the speaker had resorted to the expedient of filling in the cavity of the ordinary shell with a preparation of wax (Gilbert's temporary stopping) used by dentists. This had proven quite satisfactory in preventing the unsightly sinking of the artificial eye, the accumulation of discharges behind it, and irritation of the conjunctiva by the formation of a vacuum beneath the shell.

OPERATION FOR GALL-STONES.

DR. I. B. PERKINS of Denver reported three cases of distention, inflammation, and sepsis arising from obstruction of the ducts by gall-stones. The patients were cured by operation. The greater frequency of gall-stones among women (more than two to one) is probably due to constriction of the abdomen by customary styles of dress, as well as to a more sedentary life. The speaker had performed the operation of incision, removal of the contents of the gall-bladder, and drainage, with closure of the opening subsequently. He believed the operation of immediate closure of the gall-bladder and dropping it back into the abdomen is rarely applicable and that it ought not to be called the "Ideal" operation. Of the stitches passing through the abdominal wall to close the incision, those opposite the opening into the gall-bladder are made to enter its wall and then emerge from it again like a Lembert suture before crossing the incision. Two or three of these stitches at the center of the incision are left untied, and the gaping wound packed with gauze to ensure free drainage. When drainage is no longer needed the edges of the abdominal wound are slightly freshened and the stitches tied without the need of anesthesia. The inversion of the edges of the incision in the gall-bladder secures prompt union.

DR. JOHN B. ROBERTS of Philadelphia was favorably impressed with Dr. Perkins' plan of closing the wound. When a gall-stone is impacted in the common duct, however, it would be extremely difficult to dislodge it by any such operation. He suggested that the duct might be followed down to its entrance into the duodenum and an opening made in the duodenum opposite this point. A probe could then be introduced through the mouth of the duct and the obstructing stone pushed back into the gall-bladder and removed. The dilatation of the duct above the point of obstruction would commonly render the dislodgment of the obstruction not difficult.

APPENDICITIS WITH ANOMALOUS POSITION OF THE APPENDIX.

DR. A. J. HOSMER of Salt Lake City exhibited a boy operated on for appendicitis in whom through the usual incision in the right iliac region, no trace of the appendix or head of the colon could be found. A mass of exudate, however, could be felt far up and to the right. A median incision was made and the gangrenous appendix removed from the midst of this mass. In this case the pain was referred to the left side.

SUPRARENAL EXTRACT IN SURGERY OF THE EAR, NOSE, AND THROAT.

DR. W. W. BULETTE of Pueblo reported an experience with this agent in 201 cases, 137 of nasal, 46 of throat, and 18 of ear disease. It produces anemia of the tissues, reduces swelling and prevents hemorrhage that would otherwise be very troublesome by obscuring the field of operation. It also aids in prolonging local anesthesia, which is cut short by the hemorrhage washing away the cocain. With its help operations can be performed without pain and loss of blood. There are no unpleasant effects and there is little secondary hemorrhage. Since employing it, cases presenting symptoms of cocain poisoning have been fewer. It reduces to a minimum the patient's dread of operation.

THE BOTTINI OPERATION FOR HYPERTROPHY OF THE PROSTATE.

DR. LEONARD FREEMAN of Denver reported eight cases of enlarged prostate in which Bottini's operation was performed. The instrument consists of a platinum galvanocautery knife arranged like the male blade of a lithotrite. Any general burning of tissue in contact with the instrument is prevented by a stream of ice-water circulating through it. The operation causes little after-pain or bleeding. Five of the eight patients were practically cured. One patient improved at first and still has no residual urine, but again suffers from pain and frequent urination as badly as ever, and cancer is now suspected. The speaker believes this the best operation yet proposed for enlarged prostate. Few men submit cheerfully to castration or vasectomy. Bottini's operation causes no external wound. It can usually be performed under local anesthesia. In his cases general anesthesia was used but once. The burned surfaces are practically sealed against absorption. The benefit is immediate. There are few relapses. The patient can move about within a day or two. The mortality of the operation (generally 5 per cent.) is less than by other methods of operation.

DISEASES OF THE MASTOID.

DR. C. K. COLE of Helena, reported four cases of mastoid disease illustrative of sixteen that he had seen during the last twenty months. Such cases are essentially surgical. He advocated thorough opening of the mastoid and irrigation with not less than 2 to 4 quarts of hot sterilized water or antiseptic solution. The periosteal incision may sometimes be useful in young patients. In extreme cases multiple openings are to be advised.

TOXIC CAUSES OF INSANITY.

DR. HUBERT WORK of Pueblo called attention to the generation within the body of poisons capable of causing mental alienation. Loss of weight and anorexia occur so constantly in connection with certain psychoses as to suggest at least a common cause. Some of the most distressing symptoms of dyspepsia are mental. It is certain that insanities do result from prolonged digestive disturbances. Auto-infection from the alimentary canal may alone be the cause in many cases. He reported four illustrative cases in which treatment directed to the source of the toxic influence brought about a cure of the mental symptoms. In the first, a case of digestive disturbances, a cure was accomplished in three months. The second patient, ill with rheumatism was cured in eighteen months. The third was a case of chronic cystitis and the patient was cured in four months. The fourth patient, whose illness was due to hepatic derangement, was cured in two months. In no disease is proper medical treatment more needed at the beginning than in insanity.

AUTO-INTOXICATION AND BLOOD MORPHOLOGY IN RELATION TO OPERATIONS.

DR. P. S. KEOGH of Salt Lake City discussed the bearing of these conditions on the preparation of a patient for a surgical operation. The older surgeons well knew that complications followed less frequently when the patient had been prepared for operation by catharsis. Symptoms of indigestion and gastro-intestinal disease should always be carefully looked for. Examination of the urine might reveal a deficient elimination of solids. General anesthetics increase the danger from auto-intoxication. The examination of the blood, particularly with reference to the percentage of oxyhemoglobin and the condition of leucocytosis, gives very important evidence regarding the patient's power of resistance.

CASES OF INFECTION BY THE BACTERIUM COLI.

DR. J. N. HALL of Denver stated that this organism, at first regarded as only a harmless inhabitant of the alimentary canal, is now known to be one of the most important pathogenic bacteria. Probably the name is now applied to a whole group of bacteria representing varying degrees of virulence and not to a single species. He reported two fatal cases of infection, both patients being males. The first patient, after twenty-four-hours' retention of urine, presented great numbers of colon bacilli.

Pleuritis, bronchopneumonia, pericarditis, a purpuric eruption, pyelitis, and perinephritic inflammation ensued. In the case of the second patient there was a purpuric eruption and abscesses were scattered over the body. The bladder was distended with acid, foul-smelling urine, containing sugar and loaded with bacilli. Gas was generated within the bladder. The spleen and liver were found to be septic. The kidneys were also involved and a large abscess was found behind the sternum.

THE EARLY DIAGNOSIS OF TUBERCULOSIS.

DR. A. M. HOLMES of Denver said that there are early evidences of this disease, and if these are heeded recovery may be brought about. Loss of appetite and weight, gastric disturbances, dyspnea, and persistent cough should lead to careful and repeated examinations. The importance of the early examination of the sputum he thought has been over-rated. If the bacilli are found, the evidence would be conclusive, but they may exist in concealed foci of infection a long time before making their way into the sputum. He regarded subnormal morning temperature and "cog-wheel" respiration as important symptoms; but not hemorrhage. Early in the disease the study of the blood is more important than the study of the sputum, especially the examination of stained blood-films with a differential count. There is no excuse for delay in the diagnosis of tuberculosis. A certain test exists in the reaction produced by tuberculin. The speaker employs at first an injection of 1 milligram, and if no reaction follows this three days later 3 milligrams are injected, and if this produces no effect, 5 milligrams. The injection should be made in the evening and the reaction commonly occurs six to twelve hours later.

The following officers were elected for the ensuing year: President, Charles K. Cole of Helena, Montana; vice-presidents, Leonard Freeman of Denver and R. H. Reed of Wyoming; treasurer, Charles G. Plummer of Salt Lake City; recording secretary, Donald Campbell of Butte, Montana; corresponding secretary, S. D. Hopkins of Denver. Drs. Judson Daland and John P. Roberts of Philadelphia were elected Honorary Members. The place selected for the next meeting was Butte, Montana, and the time the last week of August, 1900.

REVIEWS.

A TREATISE ON HUMAN PHYSIOLOGY. For the Use of Students and Practitioners of Medicine. By HENRY C. CHAPMAN, M.D., Professor of the Institutes of Medicine and Medical Jurisprudence in the Jefferson Medical College of Philadelphia. New (2d) edition thoroughly revised. Illustrated. Philadelphia and New York: Lea Brothers & Co., 1899.

THE revision of this work as it formerly appeared has been mainly in the way of numerous additions and subtractions, rather than any comprehensive alteration in its general character. The statement in the author's preface that "there is a want felt by students and practitioners of medicine for a systematic work, based upon comparative and pathological anatomy, *clinical medicine* . . . as well as upon experimental research," might lead one to hope that the author, by introducing frequent comparisons with phenomena presenting conditions other than those strictly physiological, had created for his work an acceptability which, in this feature, such standard and thoroughly comprehensive treatises as Foster's does not possess. In this hope the purchaser of Dr. Chapman's book would be disappointed. It is a text-book of pure physiology.

While the work presents no unusual features it is a very scholarly presentation of the essential data of physiology, carefully arranged and logically set forth. The nervous system is considered at great length and in great detail. We do not condemn the author for thus occupying so large a part of his book, except in so far as it is unwarrantably disproportionate to the space devoted to other equally important subjects. The urine, and especially its chemistry, is in particular too briefly disposed of.

The appearance of the book is excellent; the illustrations are numerous and carefully executed.

A MANUAL OF SURGICAL TREATMENT. By W. WATSON CHEYNE, M.D., F.R.C.S., F.R.S., Professor of Surgery in King's College, and Surgeon to King's College Hospital, London; and F. F. BURGHARD, M.D., M.S. (London), F.R.C.S., Teacher of Practical Surgery and Surgeon to King's College Hospital, London. Vol. I. Philadelphia and New York: Lea Brothers & Co., 1899.

THERE is no question that the authors have given a work to the profession which was needed. The preliminary and after-treatment of surgical patients has assumed an importance which no operator can afford to neglect. These are as essential to the recovery of a patient from a surgical operation as the operative measures themselves. Hospital internes and operating surgeons are the only ones who fully realize this important factor in the treatment of surgical diseases. For such physicians as operate in centers removed from hospital facilities or who operate only occasionally, for the general practitioner who is called upon to do surgical work, and above all, for the medical student, a work of this kind is indispensable. It can be read with profit, too, by every one who is interested in surgical procedures.

In the first volume the authors deal largely with general principles. They discuss inflammation, acute suppuration, ulceration, and gangrene, in the order named. A lucid, practical chapter on anesthesia by Dr. J. Frederick Silk follows, which is a splendid review of the subject. The general treatment of wounds of surgical and accidental etiology is next considered with very clear and practical articles on hemorrhage, shock, and syncope. The constitutional diseases are fully considered in succeeding chapters and the volume closes with a discussion of the varieties of tumors and their treatment.

The book differs from all other works on surgery in the English language by confining itself strictly to practical considerations. There is no theory of disease or its causation, nothing but the treatment of patients suffering from surgical disease once the diagnosis is made. The treatment of patients before and after operation, includ-

ing anesthesia and the conduct of the treatment in the face of any of the emergencies of surgical practice, are fully set forth. The vast material on which the authors have drawn for their deductions gives the book an unusual value. It is a work of the highest worth from literary and scientific standpoints and is of corresponding value to every member of the profession. It is one of the few books of which one can truthfully say that "it should be found on the desk of every physician."

The book-making is above the average, but some of the illustrations lack in clearness. The succeeding volumes will be awaited with interest.

STEREOSKOPISCH-PHOTOGRAPHISCHER ATLAS DER PATHOLOGISCHEN ANATOMIE DES HERZENS UND DER GRÖSSEREN BLUTGEFASSEN, with fifty photographic reproductions of original impressions. By DR. G. SCHMORL. Munich: J. F. Lehman, 1899.

As its name indicates, this is a series of double photographs mounted two by two on cards and meant to be viewed with the stereoscope, which does actually in this case produce a very illusive sense of solidity in the pictures. The cards are done up neatly in a cloth-bound box and would be an excellent means of demonstrating the pathology of the heart where actual specimens could not easily be obtained. The idea of stereoscopic views in pathology is new and is well put into effect in this case.

INTERNATIONAL CLINICS. A Quarterly of Clinical Lectures on Medicine, Surgery, Neurology, Gynecology, Obstetrics, etc., with specially prepared articles on Treatment and Drugs, by Professors and Lecturers in the Leading Medical Colleges of the United States, Germany, Austria, France, Great Britain and Canada. Edited by JUDSON DALAND. Vol. II. Ninth series. Philadelphia: J. B. Lippincott Co., 1899.

THE July number of the *International Clinics* thoroughly maintains the reputation of this well-known quarterly, especially as regards the contributions from foreign clinicians. We note the names of Fournier, Grauchier, Jaccond, and Brocq of Paris, those of Von Bergman, König, Frankel, Grawitz, Lassar, Gutzman and Holländer of Berlin, and Kovacs of Vienna among the contributors to this volume. The variety of matter is excellent and the clinics have been chosen with good judgment and with an eye to their practical interest for the general practitioner in the varied problems that come up for his solution from day to day.

Brocq of Paris, in his article on the treatment of carbuncles and furunculosis details his experience with brewer's yeast in aborting carbuncles and in preventing recurrent furuncles. He had occasion to try the remedy on himself for carbuncles with which he had been affected nearly every year. It proved an excellent remedy, aborting a carbuncle that had begun to develop and acting as a prophylactic against further attacks. He has had the same success with patients who have had at least one carbuncle a year for many years, in one case over thirty years. The same result has followed its use in persistent furunculosis, and Brocq considers that yeast (for he has found the ordinary cake yeast of the shops almost as effective as brewers' yeast), is as much a specific for cutaneous suppurative conditions as mercury for syphilis, or quinin for malaria.

Dr. Holländer of Berlin presents a method for using superheated air as a hemostatic and as a cauterizing agent. The method commends itself by its simplicity, a coiled metal tube and a Bunsen-burner being the only apparatus necessary. Dr. Holländer has found it useful, especially in arresting parenchymatous bleeding, as in resection of the liver for cancer. He has employed superheated air as a therapeutic agent for inveterate cases of lupus vulgaris, and judging from the photographs of patients before and after treatment, which are given, the results have been most encouraging. Professor Ernest Grawitz presents an excellent practical review of the present position of German medical thought as to pernicious anemia. Professor König of Berlin has an interesting clinical lecture on wounds in the cardiac region and strictures of the rectum. A striking position taken by König with regard to rectal strictures is that the form of stricture which in women sometimes breaks down and causes a good deal of destruction of tissue, is really gonorrheal in origin and not syphilitic as has been supposed.

Dr. Gutzmann of Berlin gives an excellent presentation of the causes, the forms, and the treatment of stuttering. We do not think that the subject has ever been put so clearly and completely in so few pages.

The present volume is not as well printed as its predecessor. The typographic standard has been very high in the past. The illustrations in the present number are quite as good as usual, but the printing leaves something to be desired.

THE MINERAL WATERS OF THE UNITED STATES AND THEIR THERAPEUTIC USES. By JAMES K. CROOK, A.M., M.D., Adjunct Professor of Clinical Medicine and Physical Diagnosis, New York Post-Graduate School. Philadelphia and New York: Lea Brothers & Co., 1899.

THERE is undoubtedly a distinct field of usefulness for a work of this character. The fact that this is the only one dealing with this subject gives it a unique place in medical literatnre. The book is divided into two parts. The first deals with the history and origin of minieral springs, the various classifications, an analysis of the components of springs in general, the therapeutic uses of mineral waters, and two very excellent chapters on baths, and douches and their employment. In the second part the author takes up in alphabetical order according to States, the mineral springs they contain. Further he gives an analysis of the waters of each spring derived from various sources, the means of access to every resort, and the special adaptability of the different waters to disease and the proper therapeutic employment of each kind of water. The various bath resorts are fully and accurately described as well.

There is a vast fund of information within the covers of the book and while the authors must have been industrious he has made an effort to be accurate also. As far as we are able to judge from numerous comparisons he

has been successful in this particular too. This is a work which is certain to be popular for the information which most physicians have on the subject is very meager and is based on hearsay. Too often, certain baths or springs are recommended to patients without the slightest knowledge on the part of the recommending physician. In this volume the author has done for America what the Weber's have done for Europe. The book-making is beyond reproach.

THE MECHANICS OF SURGERY, COMPRISING DETAILED DESCRIPTIONS, ILLUSTRATIONS AND LISTS OF INSTRUMENTS, APPLIANCES AND FURNITURE NECESSARY IN MODERN SURGICAL ART. By CHARLES TRUAX, Chicago, 1899.

THIS is a large volume containing over 1000 pages of well printed and profusely illustrated matter. The author presents reliable and detailed information on the subject of medical and surgical instruments and appliances. It is not a price-list catalogue, but illustrates and describes such mechanical appliances as research and experience have proved best adapted to the purposes for which they are designed. It is full of valuable information and suggestion, especially for those members of the profession who do not have ready access to surgical instrument shops.

THE THROAT AND NOSE AND THEIR DISEASES. By LENNOX BROWNE, F.R.C.S.E., Senior Surgeon to the Central London Throat, Nose, and Ear Hospital. Assisted in Anatomy by MAYO COLLIER, M.S., F.R.C.S.; in Nervous Diseases by JAMES CAGNEY, M.D.; in Histopathology by WYATT WINGRAVE, M.R.C.S. Fifth edition. Illustrated mostly from designs by the author. London: Bailliere, Tindall & Cox, 1899.

THE study of this volume of almost a thousand pages is most satisfactory. Although the distinguished author has allied himself with others for the elaboration of technical subjects, the work stands as a monument to his learning, his experience, and his industry. While it is a work which can with profit be read and digested by every physician who is in the habit of treating diseases of the nose and throat, it is, and we think, will remain for a long time, a standard authority on the special subject with which it deals.

The anatomy and physiology of the larynx, pharynx, and nose are first considered; then follow chapters on the examination of these organs, general symptomatology, and an exhaustive chapter on treatment. The general etiology and pathology of throat diseases are next discussed, an entire chapter being devoted to the bacteriology of the subject. The pathology of the nose is similarly treated, and then follow chapters dealing successively with the individual diseases of the nose and throat. The final chapters are given over to the diseases of the accessory cavities of the nose and aural maledies associated with nasopharyngeal disease.

It is surprising to note that in the chapter devoted to diphtheria the author, while not directly opposing the use of antitoxin, does not view its use as a specific as we in this country are accustomed to regard it. He believes that the value of the antitoxic serum depends more upon its dynamic properties as a serum that upon the antitoxin which it contains. The author has thus, at least, made a step forward during the past two years.

The whole subject of pharyngeal and nasal diseases is illumined by this work and we regret that it is impossible to give it more extended review. In closing we would note that American writers are freely cited throughout the book.

The illustrations are more than usually elaborate and aid decidedly in giving the book a distinguishing mark. As a text-book we know no equal in the English language.

THERAPEUTIC HINTS.

Painless Injections of Mercurials.—BAZIN states that if pure guaiacol be incorporated with the oil used as a medium for intramuscular injections of mercurials the process is rendered practically painless. He gives this formula, the guaiacol being employed in the proportion of three per cent.

℞	Hydrarg. iod. rubr. . . .	gr. viii
	Guaiacol pur.	*m.* xlv
	Ol. olivæ ster.	℥ iii.

M. Sig. For hypodermic use.

The injections are practised daily or every other day, 30 minims representing approximately gr. ⅓ of the biniodid. The needle is inserted perpendicularly to the skin, pushed in to its full length, and the liquid injected very slowly, the buttocks being chosen preferably for the operation.

For Alopecia Areata.—BALZER praises the efficacy of lactic acid in overcoming this disease. It is applied on a bit of absorbent cotton to the affected areas, with light friction until the skin appears reddened. This is repeated daily, but if the irritation produced become too intense, possibly causing the formation of crusts, the treatment should be suspended and irritation subdued by applications of boric vaselin. As soon as possible the lactic-acid treatment should be resumed. Antisepsis of the scalp is secured by bathing with Van Swieten solution. New hair should appear in two to three weeks and a complete cure be anticipated in two to three months. When the beard is affected the process of cure is more prolonged.

For the Pruritus of Senility.—

℞	Sodii bromidi Sodii salicyl.	aa	ʒ iv
	Sodii iodi Sodii acetat.	aa	ʒ ii
	Inf. gentianæ	. . . .	℥ ii.

M. Sig. One teaspoonful in water after meals.

Locally: Bathing with a hot solution of corrosive sublimate, 1–2000; of acetic acid, 1 per cent., or of potassium permanganate, 2 per cent., or stronger. This is followed by inunction with:

℞	Menthol	gr. viii
	Guaiacol	ʒ iss
	Ac. salicyl.	ʒ ss
	Lanolini	℥ i.

M. Sig. External use.—*Lavallée.*